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ABSTRACT

With the military's requirements for high-quality recruits expected to increase over the next decade, a study was conducted to evaluate the recruiting potential of two-year post-secondary institutions. Specifically, the study sought to ascertain the characteristics of two-year colleges, whether sufficient numbers of potential recruits existed in these institutions for fruitful recruitment, the degree to which these students met enlistment standards, the penetrability of the market, the value of previous recruits, and research needed for the development of successful recruitment policies. A review of the literature on higher education and military recruiting from this market, as well as analyses of data from the Defense Manpower Data Center and from three large-scale surveys of youth, revealed that: (1) over 1 million male two-year college students were estimated to fall within recruitment ages; (2) this market had not been substantially penetrated, as less than 4% of all 1981 recruits without prior military experience had 1 or 2 years of college, and less than 1% of the two-year college class of 1981 were considering a military career option; (3) the instability of two-year college students' educational and career goals indicated that with the right recruitment incentives and strategies the market could be penetrated; and (4) recruits with prior college experience had lower attrition rates than non-college recruits. Recommendations for further study are included. (DAB)

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A RAND NOTE

POTENTIAL FOR MILITARY RECRUITING FROM TWO-YEAR COLLEGES AND POSTSECONDARY VOCATIONAL SCHOOLS

Richard J. Shavelson, Gus W. Haggstrom, John D. Winkler

January 1983

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Prepared for

Office of the Assistant Secretary of Defense/Manpower, Reserve Affairs and Logistics

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PREFACE

This Note presents the findings of the Rand research project "Exploratory Studies of the Recruiting Market in Two-Year Postsecondary Institutions." Over the next 10 years, the services' requirements for "high-quality" recruits are expected to increase, while the size of the manpower pool is expected to decrease. To meet accession needs, as yet untapped recruiting markets need to be explored. The goal of this project is to evaluate the recruiting potential of one such market--the two-year postsecondary institutions. This Note is a progress report on that evaluation. It was prepared as part of Rand's Manpower, Mobilization, and Readiness Program, sponsored by the Office of the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics).

The authors wish to thank David Boesel, Arthur M. Cohen, and Anita Lancaster for their critical reviews of this document. The authors are responsible, nevertheless, for any errors of commission or omission.

SUMMARY

A major goal of military accession policy is to recruit high-quality manpower into the All Volunteer Force. Although accession goals are currently being surpassed, this probably will not continue far into the 1980s. With economic recovery and decreasing unemployment, competition between the military and the civilian sector for high-quality manpower will increase over the next 10 years as job complexity increases with advancing weapon sophistication, enlistment standards are raised, and the pool of college age youth decreases in size.

One way to increase the number of high-quality accessions is to recruit from as yet untapped markets that contain large numbers of potential high-quality recruits. One such market for accessions into either the active or reserve forces includes postsecondary educational institutions such as two-year colleges (junior and community colleges and vocational training colleges) and noncollegiate institutions (adult education centers, area vocational schools, private nonprofit occupational institutes, and specialized proprietary schools).

The purpose of this study, in broad terms, is to examine this postsecondary education market--the institutions and their students--to ascertain whether (a) there are sufficient numbers of potential recruits in these institutions for recruiting to prove fruitful, (b) most of the students in the market meet enlistment standards, (c) the market can be penetrated, (d) previous recruits have proven their value to the military, and (e) additional research is needed to develop successful recruiting policies.

To meet these goals, we surveyed the literature on postsecondary institutions and other research pertinent to recruiting in this market. The more important of the two studies that directly address recruitment strategies is reviewed. In addition, we examined Defense Manpower Data Center (DMDC) accessions data for 1981, as well as data from three large-scale surveys of youth: The National Longitudinal Survey of the High School Class of 1972 (Levinsohn et al., 1978), High School and Beyond (Peng et al., 1981), and the 1979 DoD Survey of Personnel Entering Military Service (Doering et al., 1980).

There is no question that the postsecondary institutions under study contain large numbers of potential high-quality recruits, but the exact sizes of the subpopulations of primary interest are hard to pin down. Even the estimates of total enrollments in the two-year colleges vary from one source to another. The National Center for Education Statistics (NCES) reported that 4.5 million students were enrolled in these colleges in the fall of 1980, while the Bureau of the Census estimated the total enrollment in October 1980 to be 3.1 million. In any case, these figures grossly exaggerate the pool of potential recruits because the majority of the students are either not eligible to enlist or have career and family commitments that effectively preclude military service as an option. If the Bureau of the Census enrollment figure is used as a base, there were approximately 1.3 million males in the two-year colleges in October 1980, of whom approximately 720,000 were 21 or younger. Including a rough estimate of the number of military eligible males age 22 and above, we estimate that in 1980 there

were something like one million male students in the two-year colleges who fell within the targeted age range for nonprior service accessions.

Although recruiting policies are ordinarily targeted to individuals within the 18 to 21 age group, older students should also be considered for both the active forces and the reserves. Furthermore, students with prior military service should also be considered in accession policy, perhaps as important sources of manpower for the reserves. In FY81, 370,000 veterans attended two-year colleges under the Post-Korean Educational Assistance Program and another 120,000 attended vocational and technical schools. These numbers suggest that two-year colleges and vocational schools might serve as locales for recruiting prior servicemen.

With respect to meeting enlistment standards--age, ability, single without dependents, good morals, and physical health--recruiting from two-year colleges and postsecondary vocational schools promises to raise the overall quality of the enlisted force. Two-year college students are above average in aptitude, and over 90 percent of those between the ages of 18 and 21 are single and report being in good physical health.

The two-year college and postsecondary vocational school markets have not been substantially penetrated to date. For example, less then 4 percent of all nonprior service accessions in 1981 had one or two years of college. Less than 1 percent of the freshmen in the two-year college class of 1981 indicated that they were considering the military as a career option. Nevertheless, the market contains many students whose educational and occupational aspirations are unstable, and their changing aspirations are mirrored by their behavior. Over 60 percent of the students are enrolled part-time; transfers into and out of college

are common. Instability in and mobility among academic and vocational tracks and the labor force characterize the behavior of many of these students. Furthermore, many two-year college students have educational and occupational plans that will not be realized. For example, approximately 75 percent of entering freshmen say they intend to transfer to a four-year college or university; the transfer rates from two- to four-year colleges are, in fact, quite low--around 6 percent. The career plans and behavior, then, of many students in two-year colleges and postsecondary vocational schools are in a state of flux, more so, for example, than high school graduates entering either four-year colleges or universities. These students' changing educational and career goals lead us to believe that, with the right recruitment incentives and strategies, this market might be penetrated.

Recruits with some college are useful to the military if they successfully complete training in a minimum amount of time, fill critical occupational specialties, perform well on the job, and are not subjects of disciplinary actions. For recruits who entered military service during FY78, enlistees with one or more years of college had lower attrition rates than those with less education.

Additional research is required to determine what recruitment strategies would be most fruitful. To this end, we identify four types of studies: (1) analyses of existing data sets, (2) an examination of effective uses of recruiters in the postsecondary market, (3) a market survey of alternative recruiting packages and communication channels, and (4) a targeted recruiting experiment in the postsecondary education market.

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I. INTRODUCTION

A major goal of military accession policy is to recruit high quality manpower into the All Volunteer Force. Although accession goals are currently being surpassed, there are good reasons to believe that this will not continue far into the 1980s unless recruiting and compensation strategies are changed. With economic recovery and decreasing unemployment, postsecondary education and the civilian labor force compete with the military for high-quality manpower. This competition is expected to increase over the next 10 years as job complexity increases with advancing weapon sophistication, enlistment standards are raised, and the pool of high-quality youth decreases (see Fig. 1).

As an indication of the military's need to expand its recruiting efforts to meet accession goals, consider the following. In FY81, there were approximately 320,000 nonprior service (NPS) enlisted accessions--280,000 men and 40,000 women. Eighty percent of the male enlistees and 93 percent of the women had high school diplomas. The 225,000 male enlistees in 1981 with high school diplomas amounted to 15.2 percent of the total number of male high school graduates in the United States during that year. According to projections by the National Center for Education Statistics, the number of male high school graduates will decline from 1.5 million in 1981 to 1.2 million in 1990. If the military's recruiting requirements during the rest of the 1980s remain stable (as the dotted lines in Fig. 1 indicate), the number of male enlistees with high school diplomas as a percentage of the number of

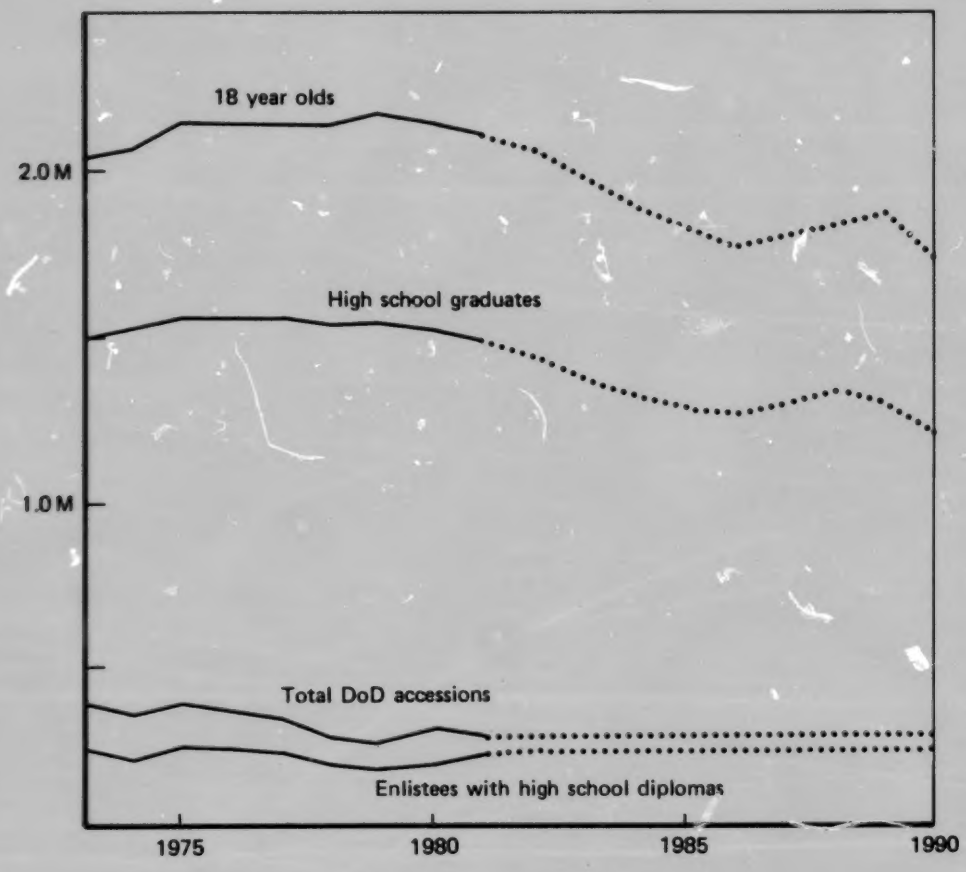


Fig. 1 – Male cohort sizes and accession needs (1973–1990)

male high school graduates would rise from 15.2 percent in 1981 to 18.8 percent in 1990, implying that the military will have to increase its "take" of the postsecondary male youth cohort by about one-fourth. If, in addition, efforts to increase the percentage of high school graduates among new recruits are to be realized, the military will have to recruit approximately 20 percent of all male high school graduates in the late 1980s.

One way to increase high-quality accessions is to recruit from as yet untapped markets that contain large numbers of potential high-quality recruits. One such market for accessions into either the active or reserve force is postsecondary educational institutions such as two-year colleges (e.g., junior and community colleges and vocational training colleges) and noncollegiate institutions (adult education centers, area vocational schools, private nonprofit occupational institutes, and specialized proprietary schools).

A cursory analysis of this marketplace suggests considerable potential. There are over 4 million students enrolled in two-year colleges. About half fall within the prime recruiting ages (18 to 21 years) and virtually all of them have high school diplomas. Moreover, most students in postsecondary institutions have strong vocational interests and are preparing for specific occupations, many of which overlap to some degree with military accession needs.

The purpose of this report is to examine this postsecondary market--the institutions and their students--to ascertain whether (a) these institutions might provide fruitful recruiting environments, (b) most of the students in them meet enlistment standards, (c) the market can be penetrated, (d) previous recruits have proven their value to the military, and (e) additional research is needed to develop successful recruiting policies.

To meet these goals, we examined the literature on higher education and on military recruiting from this market. Only two studies of the latter type were found. In addition, we examined Defense Manpower Data Center (DMDC) accessions data for 1981, as well as data from three

large-scale surveys of youth: The National Longitudinal Survey of the High School Class of 1972 (Levinsohn et al., 1978), High School and Beyond (Peng et al., 1981), and the 1979 DoD Survey of Personnel Entering Military Service (Doering et al., 1980). The next section of this Note reviews the literature as it bears on the institutions and students, the penetrability of the marketplace, the utility of recruits from it, and the recruiting environment. Section III gives the results of our analyses of existing data sets as they bear on accession policy issues. The final section presents our recommendations for the next steps in developing accession policies for this market.

II. ANALYSIS OF THE MARKETPLACE: LITERATURE REVIEW

In considering the possibility of recruiting in two-year colleges and postsecondary vocational institutions, the first question is whether there are sufficient numbers of potential enlistees to make a concerted recruiting effort worthwhile. If the answer is affirmative, the next question is whether these potential recruits would meet current and projected accession requirements and whether most of them have the characteristics that would make them prime targets for recruiting: high school graduates, above average in ability, between the ages of 18 and 21 years, single or married without dependents, and physically and morally acceptable. An affirmative answer leads to a series of questions: Is the market penetrable? Are recruits from this market useful to the military? For example, do they fill critical occupational specialties? Are they readily trainable? Are they productive? And finally, can recruiting be conducted successfully within these postsecondary institutions?

THE NATURE OF TARGET POSTSECONDARY INSTITUTIONS

This study focuses on postsecondary institutions that offer degrees and certificates below the bachelor's degree. These institutions can be classified as either collegiate or noncollegiate. The latter include publicly supported institutions such as adult education centers and area vocational schools, private nonprofit occupational institutes (principally trade schools and hospitals), and specialized proprietary institutions such as schools of cosmetology, business/office colleges, and flight training. All such institutions emphasize occupational training.

Data published by the National Center for Education Statistics (NCES) provide a detailed picture of noncollegiate postsecondary school enrollments and curricula (Kay, 1979). In 1979, NCES estimated that approximately 1.5 million students were enrolled in 7,625 institutions (not including correspondence schools). Of these, 812 schools were publicly controlled, enrolling half a million students, and 6,813 schools were private, enrolling about a million students. The mean enrollments in public and private noncollegiate institutions were 556 and 153 students, respectively. Within these postsecondary noncollegiate institutions, the most popular programs of study as indicated by the number of offerings and enrollments were: cosmetology, secretarial training, nursing (principally practical and nurse assistant), commercial flight training, and auto mechanic training.

Within collegiate institutions, we distinguish two- and four-year institutions and focus on the former. A two-year college is, by definition, accredited to award an associate degree as its highest degree. This definition encompasses a number of different institutions, including junior colleges, community colleges, and a variety of technical institutes. However, all share the following characteristics: (a) degree programs are of college-level difficulty and (b) the institution is accredited or preaccredited at the college level by a nationally recognized accrediting agency or by the fact that its course credits are accepted by at least three other accredited institutions (Broyles and Davis, 1982).

Compared with noncollegiate institutions, two-year colleges enroll a much larger number of students at a smaller number of locations (see

Table 1). The NCES estimates that in 1981 there were 1,275 two-year colleges in the United States, with a total enrollment of about 4.5 million students (Broyles and Davis, 1982). Taken together, enrollment data for postsecondary institutions indicate that the greatest market density for potential recruits exists at two-year colleges. Average enrollments in noncollegiate institutions were low compared with collegiate institutions in those years for which complete data are available (Table 1). Furthermore, only 8 percent of the noncollegiate institutions had enrollments greater than 500 students as of 1978 (Kay, 1979, p. 33). Thus, the greatest density of potential recruits would appear to be in two-year colleges.

Table 1

MARKET DENSITY IN NONCOLLEGIATE POSTSECONDARY AND TWO-YEAR COLLEGIATE INSTITUTIONS, 1979

Type	Number of Institutions[a]	Enrollments	Mean Enrollment
Public college	926	4,069,462	4,395
Private college[b]	272	180,565	663
Public noncollege	812	451,800	556
Private noncollege	6,813	1,043,400	153

SOURCES: Broyles and Davis (1982); Kay (1979); Pepin and Wells (1981).

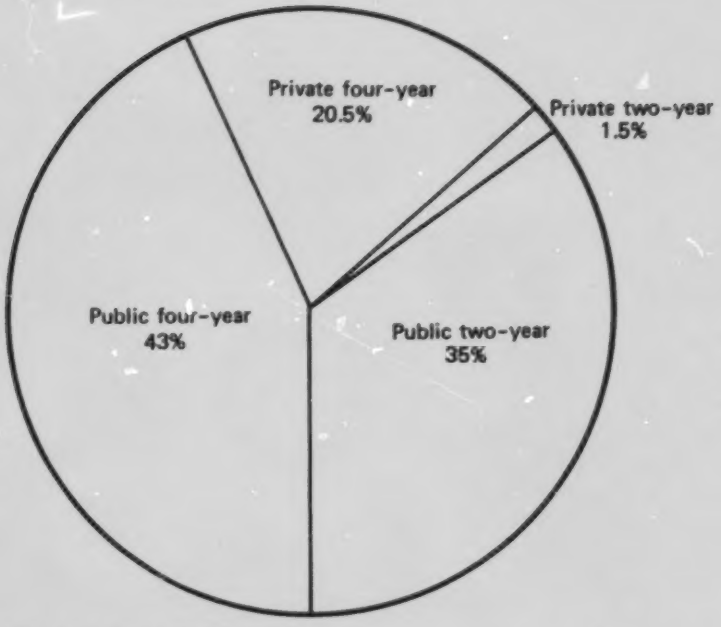
[a] In 1981 there were 1,275 two-year colleges in contrast to 1,198 in 1979 reported here.

[b] Data for 1978. 1979 data are unavailable.

SIZE AND CONTROL OF TWO-YEAR COLLEGES

The characteristics of two-year colleges vary greatly, partly because the individual institutions known today collectively as "two-year colleges" arose under extraordinarily different circumstances. Some were established as adjuncts to public secondary schools (e.g., two years of occupational training beyond the high school degree), some as adjuncts to colleges and universities (e.g., freshman and sophomore years of academic education), others as private alternatives to public education, and still others as profit-making institutions. These initial differences are now reflected in the size, administration, and location of two-year colleges. Like their noncollegiate counterparts, there is an important distinction between public and private two-year colleges. Of the 1,275 two-year colleges counted by NCES in the 50 states and the District of Columbia in 1981, 940 (74 percent) were publicly controlled, and 335 (26 percent) were private (Broyes and Davis, 1982). In 1979, the most recent year for which enrollment data are available, 96 percent of the two-year college students were enrolled in public institutions (Dearman and Plisko, 1981, p. 164; see Fig. 2). Based on the number of two-year colleges counted that year by NCES, mean enrollments were nearly 4,395 in public two-year institutions, compared with approximately 650 in private two-year institutions (see Table 1).

There are, however, a small number of private two-year colleges with large enrollments. Table 2 presents data on the distribution of enrollments in public and private two-year colleges (Dearman and Plisko, 1981). These data indicate that most of the two-year college students are concentrated in public two-year colleges and in selected private



SOURCE: Condition of Education, 1981

Fig. 2 – Enrollment in postsecondary institutions, 1979

Table 2

DISTRIBUTION OF ENROLLMENTS IN PRIVATE AND PUBLIC TWO-YEAR COLLEGES, 1979

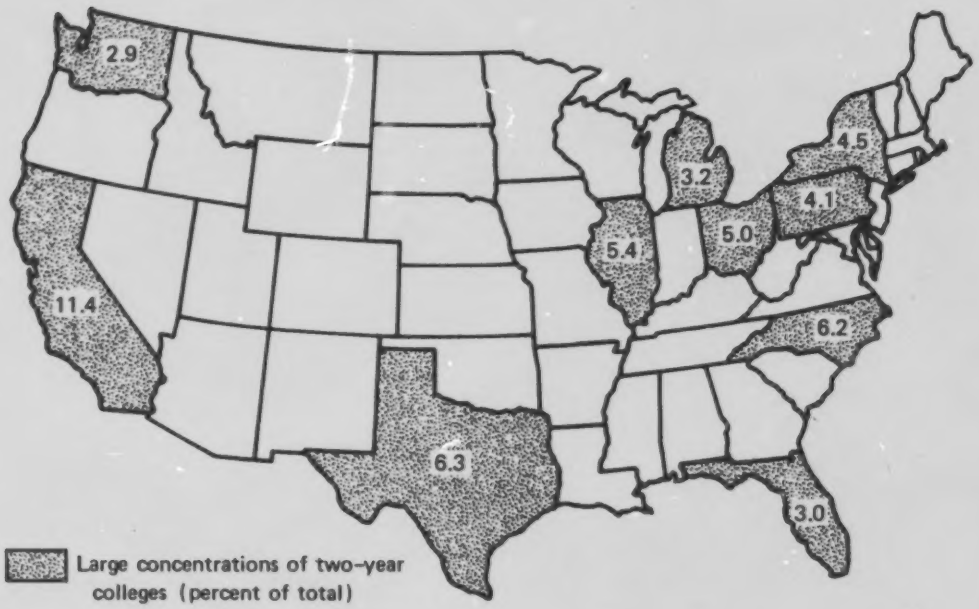
Enrollment	Number of Public Institutions	Number of Private Institutions	Total
1- 499	36	157	193
500- 999	115	78	193
1,000- 2,499	321	27	348
2,500- 4,999	187	4	191
5,000- 9,999	163	2	165
10,000-19,999	81	0	81
20,000-19,999	22	0	22
Total	925	268	1,193

SOURCE: Dearman and Plisko (1981).

two-year colleges. Thus, recruiting efforts directed toward this market could focus on a fairly small number of institutions.

LOCATION AND DISPERSION

Whether public or private, large or small, two-year colleges are widely dispersed and are found in every state. They are also found in several outlying territories of the United States; 12 are in Puerto Rico and one each in Guam, American Samoa, and the Pacific Island Trust Territory. As shown in Fig. 3, the dispersion of two-year colleges corresponds to the population densities in the United States. The largest numbers of two-year colleges are found in 10 populous states: California, New York, North Carolina, Pennsylvania, Texas, Illinois,



SOURCE: Education Directory, Colleges and Universities (1981-1982)

Fig. 3 -- States with the largest concentrations of two-year colleges

Ohio, Michigan, Florida, and Washington (Table 3). Further, these 10 states account for half of the institutions and two-thirds of the enrollments. Indeed, California accounts for over a tenth of the total number of institutions in the United States and for over a quarter of the enrollments. The prevalence of two-year colleges in the more populous states is not entirely attributable to just population growth. In California, Illinois, and Texas, two-year colleges were promoted by educators, some of whom argued that two-year postsecondary institutions should provide lower division education for upper division research universities; hence the name "junior college" (cf. Breneman and Nelson, 1981). Today, there are 119 two-year colleges in California, 65 in Texas, and 62 in Illinois. In other states, two-year institutions were

Table 3

STATES WITH LARGEST NUMBERS OF PUBLIC TWO-YEAR COLLEGES AND ENROLLMENTS, 1979

State	Number of Institutions	Percent	Enrollment	Percent
California	105	11.4	1,069,082	26.4
Texas	58	6.3	253,923	6.3
North Carolina	57	6.2	95,219	2.3
Illinois	50	5.4	277,601	6.8
Ohio	46	5.0	118,836	2.9
New York	42	4.5	242,628	6.0
Pennsylvania	38	4.1	98,842	2.4
Michigan	30	3.2	199,099	4.9
Florida	28	3.0	200,608	4.9
Washington	27	2.9	194,115	4.8
Other	481	52.0	1,306,857	32.2
Total	925	100.0	4,056,810	100.0

SOURCE: Dearman and Plisko (1981).

established to provide college-level postsecondary education for the local population, especially in those states where four-year colleges and universities were few in number or geographically inaccessible to a large segment of the population. As a consequence, two-year colleges today outnumber four-year colleges and universities in seven states: Washington, Nevada, Arizona, Wyoming, New Mexico, Mississippi, and Alaska.

GROWTH IN NUMBER OF INSTITUTIONS AND ENROLLMENTS

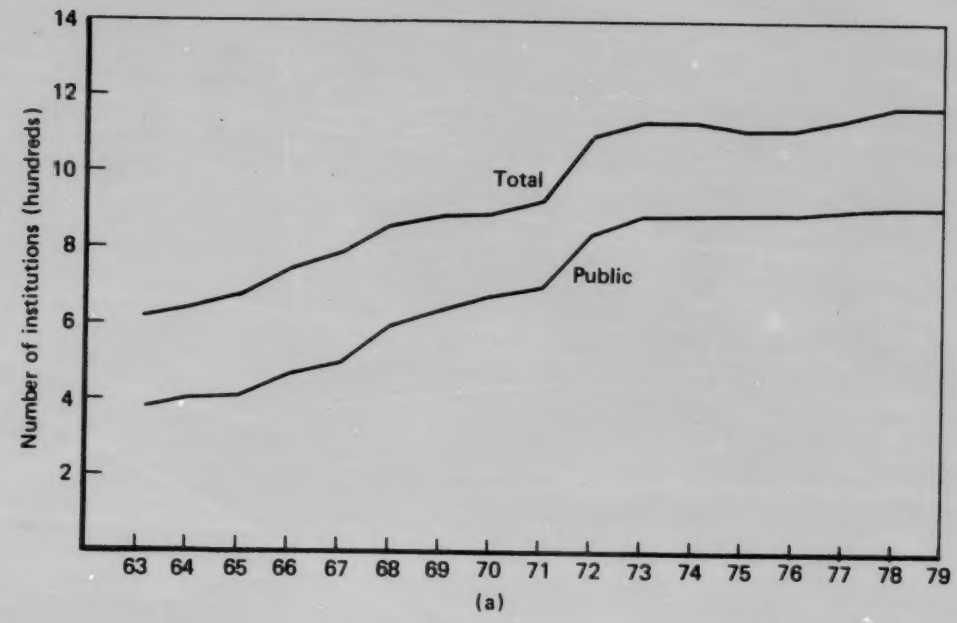
Two-year colleges have grown dramatically over the last two decades. The number of institutions approximately doubled and enrollments nearly quintupled (Grant and Eiden, 1981). Public

two-year colleges experienced both the greatest growth in the number of institutions (Fig. 4a) and in enrollment (Fig. 4b). Between 1963 and 1979, enrollments in public two-year colleges increased by 452 percent, while enrollments in private two-year colleges increased 46 percent. Meanwhile, the number of public institutions increased by 75 percent, compared with a 35 percent decrease in private two-year colleges (see Cohen and Brawer, 1982, Table 1).

One way to appreciate the extent of enrollment growth in two-year colleges is by contrasting it with growth in four-year colleges and universities. The increase in college-level enrollments during the seventies was accounted for, in large part, by public two-year colleges (Fig. 5). In 1970, enrollments in two-year colleges accounted for 26 percent of all enrollments in institutions of higher education. By 1979, this figure had increased to slightly more than 36 percent (Dearman and Plisko, 1981, p. 164). There are a number of reasons for this, including growth in occupational curricula and part-time enrollments.

The rapid growth of two-year colleges ended, however, in 1975, according to NCES data and projections (Fig. 5). NCES predicts some growth in the two-year colleges during the 1980s, and they may account for an increasing percentage of total college enrollments if escalating educational costs at the four-year colleges should make the two-year colleges more attractive to students from low-income families. Thus, the two-year colleges are likely to continue to enroll a substantial proportion of the nation's college population.

Finally, the number of part-time students in two-year colleges has increased dramatically over the past 10 years (Fig. 6). Today, roughly 65 percent of all students are enrolled part-time.



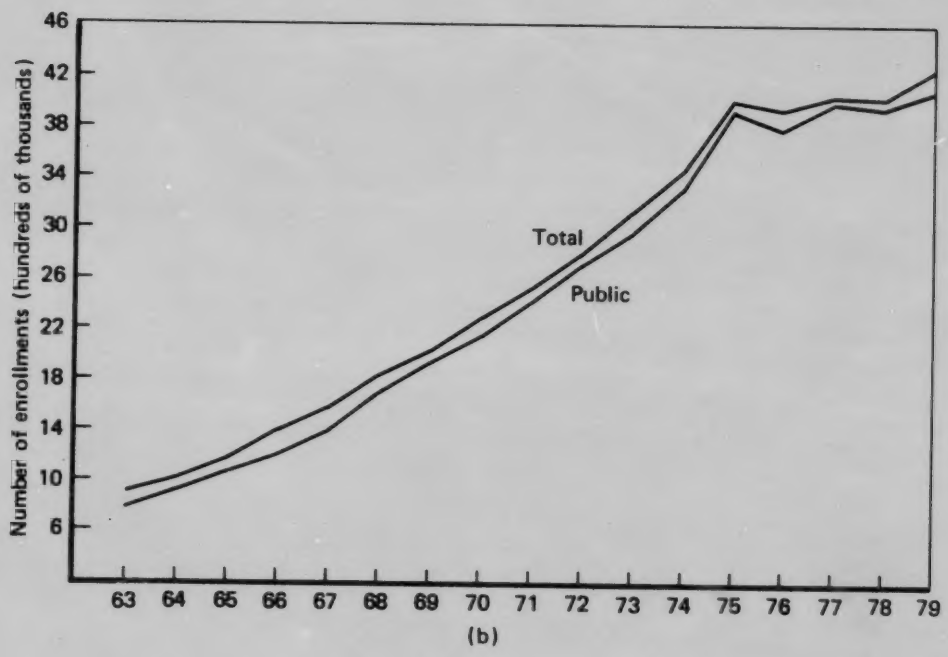
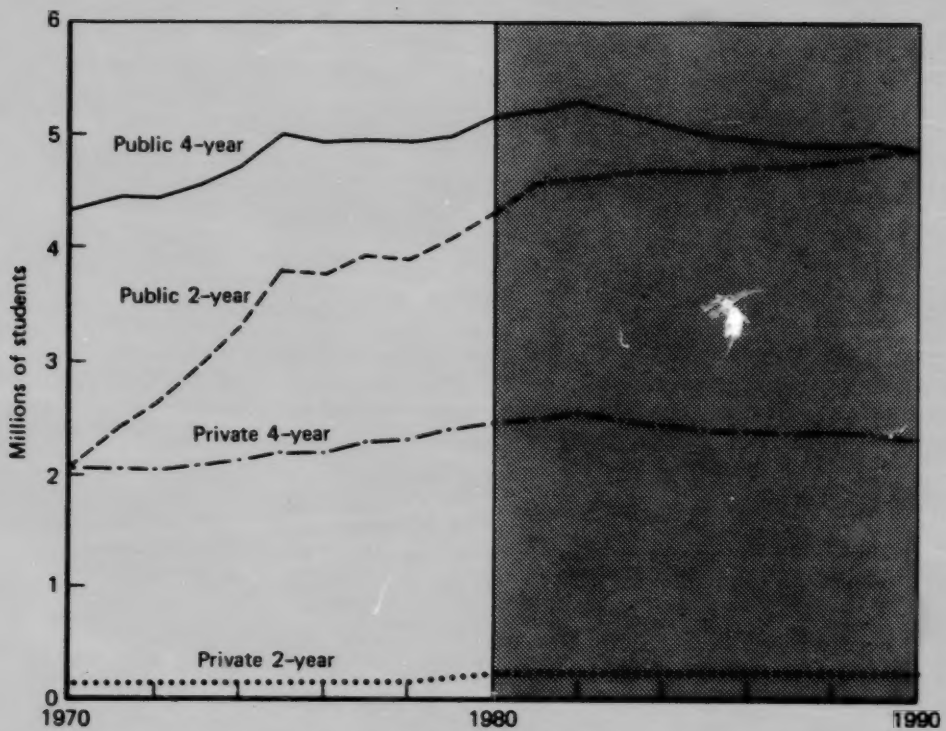


Fig. 4 – Growth in (a) number of two-year institutions and (b) their enrollments: Fall 1963 to Fall 1979



SOURCE: Projections of Education Statistics to 1990–1991
Note: Shaded area indicates projected enrollments

Fig. 5 — Enrollment trends in collegiate institutions

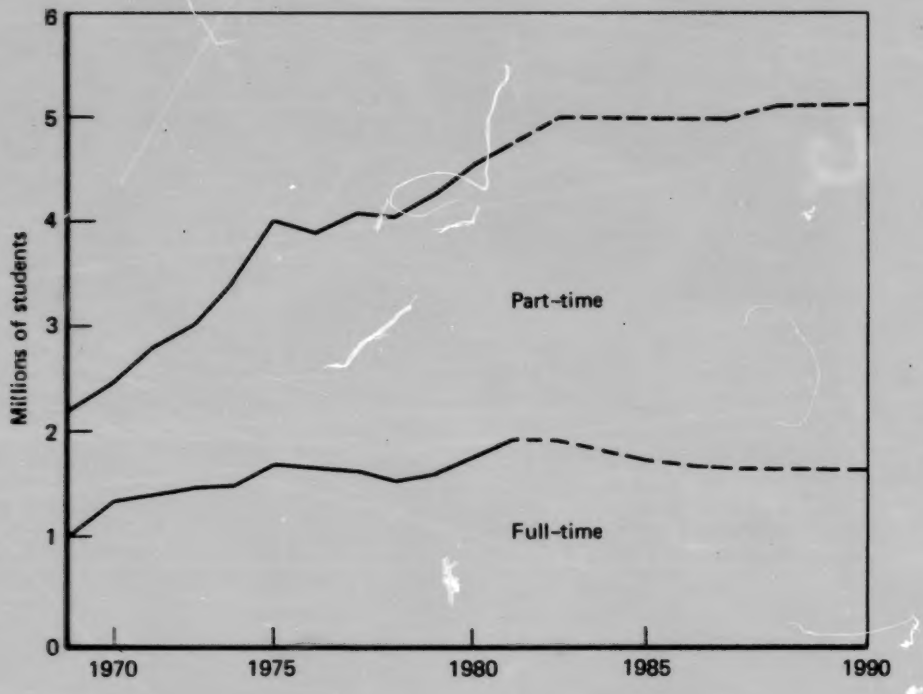


Fig. 6 – Two-year college enrollments

CURRICULAR FUNCTIONS

Different missions and objectives in two-year colleges have led to a broad spectrum of curricular functions. The original purpose of the "junior college" was to provide academic instruction in preparation for transfer to a four-year college or university. For those two-year colleges known as "technical institutes," the primary orientation was frequently vocational training in preparation for a career. The term "community college" was coined to encompass two-year colleges with academic or vocational (or both) functions as well as to cover

additional, newer programs including continuing education, remedial coursework, and community service. Community colleges with diverse programs reflected an effort to expand the constituency of two-year colleges to include part-time and older students and those who could not afford a traditional college education.

Academic preparation and occupational training are still the most heavily emphasized curricular functions of two-year colleges, but the emphasis on these curricula has shifted from academic to vocational. This shift is reflected in the number of associate degrees awarded by two-year colleges (Dearman and Plisko, 1981; Cohen and Brawer, 1982, and shown in Fig. 7). Of all associate degrees awarded in the past decade, degrees in arts and sciences or general academic programs, which typically represent transfer degrees, have declined by 20 percent while degrees in occupational fields have increased by this amount. Most of the vocational degrees are awarded to students in health science (e.g., nursing, dental hygiene), data processing, and industrial arts programs.

Many two-year college students do not complete associate degrees in either academic or vocational fields. For example, the attrition from two-year colleges over a two-year period (1972-1974) was 39.8 percent in public instituituons and 32.2 in private institutions; the attrition in four-year schools was 28.5 percent and 22.3 percent for public and private institutions, respectively (Kolstad, 1977). Kolstad also reported that attrition systematically decreased in both two- and four-year institutions over the 22-year period from 1950 to 1972. Of the two-year college students who withdrew in 1973, 46 percent said they planned to reenter college within a year.

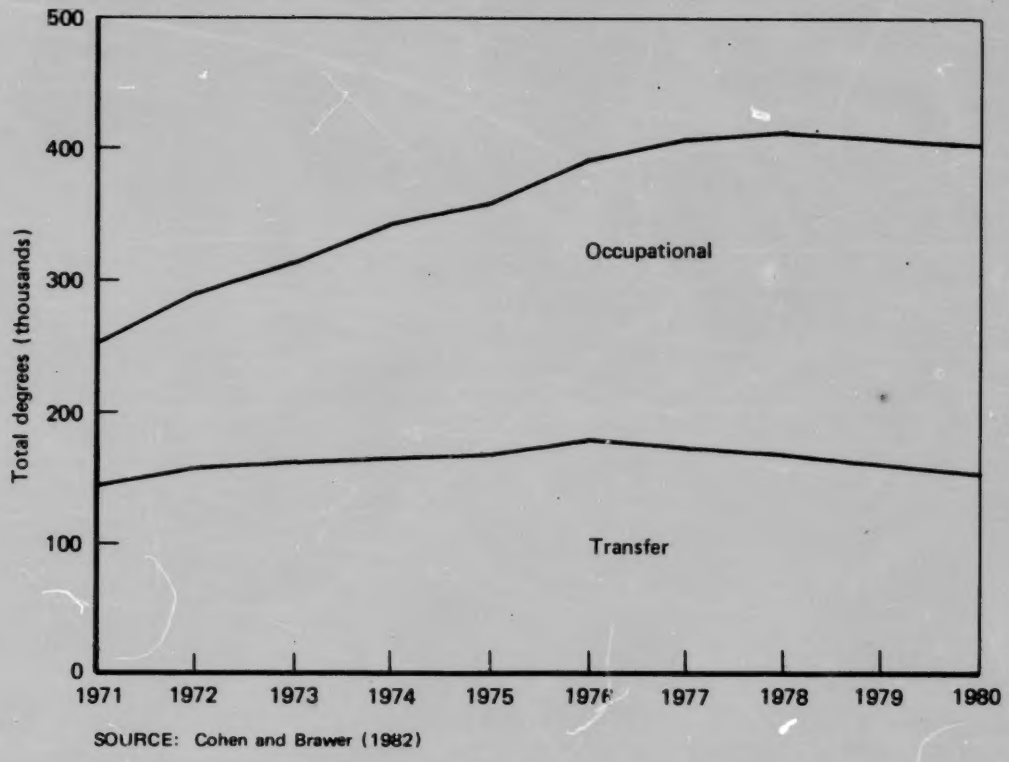


Fig. 7 — Numbers of associate degrees awarded, 1970-1980

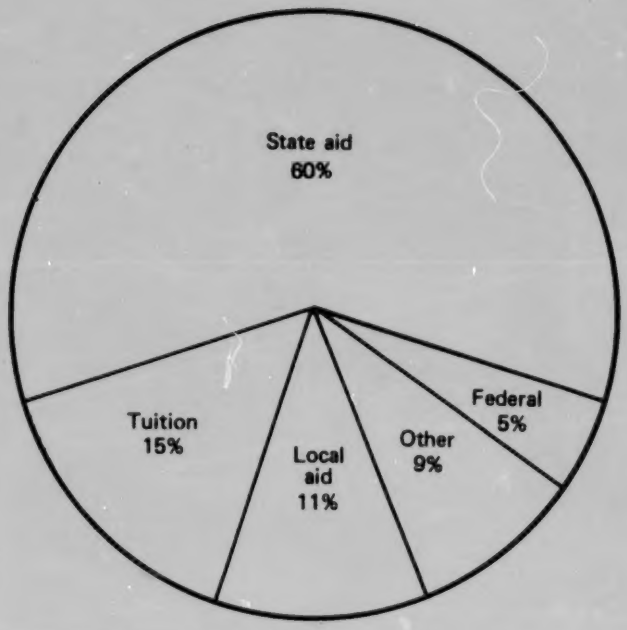
Kolstad reported numerous reasons for attrition. Although many people believe this attrition is due to the inability of two-year college students to do college-level work, less than 16 percent of them (<25 percent of the four-year college students) cited difficulty of studies as a reason for leaving. Rather, the most frequently cited reason was working full-time (49.5 percent in two-year colleges and 39.4 percent in four-year schools), and then working part-time jobs (26.1 and 17.2, respectively). Attrition is also related to socioeconomic status. Kolstad reported that, in the two-year colleges, attrition was 46.6 percent in the lowest socioeconomic status quartile, 40.4 percent in the

middle two quartiles combined, and 33 percent in the highest quartile. The analogous figures for the four-year institutions were 33.1, 27.0, and 17.9.

An extremely important activity conducted within two-year colleges, one not typically considered a curricular function, is counseling and career guidance. The importance of this service is related to the fact that many students in two-year colleges fail to complete their programs of study and/or do not transfer to four-year colleges or universities. This has led some to say that two-year colleges serve a "cooling-out" function in which unrealistic students' aspirations are brought in line with reality (Clark, 1960, 1980). Some students may find themselves shifting from an academic to an occupational orientation; others may find themselves leaving the college for newly attractive employment options.

FINANCIAL STABILITY

Public two-year colleges receive support from a variety of sources, including local, state, and federal funds, tuition and private donations (Breneman and Nelson, 1981; Cohen and Brawer, 1982). The relative proportion of funds received from these sources has been changing. Today, state aid is the main source of income, and the percentage of income derived from state aid has been increasing in recent years. In 1980, state aid provided approximately 60 percent of the income for two-year colleges (see Fig. 8). Tuition and fees have accounted for a fairly constant source of income over the last 20 years; in 1980, they accounted for an estimated 15 percent of total income. Federal aid, which has been a minor source of income for two-year colleges, accounted for 5 percent of total income in 1980. Local aid has decreased 75



SOURCE: Cohen and Brawer (1982).

Fig. 8 — Sources of income for public two-year colleges

percent over the past 10 years and accounted for about 11 percent of the total income in 1980. The remaining 6 percent of total income in 1980 came from private gifts, auxiliary services, and the like (Cohen and Brawer, 1982).

In this era of retrenchment, with state revenues especially vulnerable, what is the outlook for public two-year colleges? Given their well-established position in the nation's educational system and their ability to undertake new roles, we believe that they will continue to serve a major portion of the postsecondary education clientele, even though the rapid growth of these institutions and their enrollments has ended. Two-year colleges will be hard-pressed financially but they have

proved themselves to be extraordinarily adaptive in the past, and there are a number of ways that they can adapt to threats to their primary funding bases, possibly including developing new, mutually beneficial relationships with the military. For some scenarios of possible developments, see Breneman and Nelson (1981).

CHARACTERISTICS OF STUDENTS IN TWO-YEAR COLLEGES

From their institutional characteristics and overall enrollments, the two-year colleges appear to provide a very favorable environment for recruiting. However, a closer look at the students themselves may reveal obstacles to recruiting. Many students might not meet enlistment standards, or they may be unwilling to consider the military as an occupational alternative. In developing accession policies for the two-year college market, the first question is how many, of the over 4 million enrollees, meet enlistment criteria. If there are adequate numbers of potential recruits, the next step is to profile the characteristics of the students. The question of whether these students can be attracted into the military is discussed later in this section.

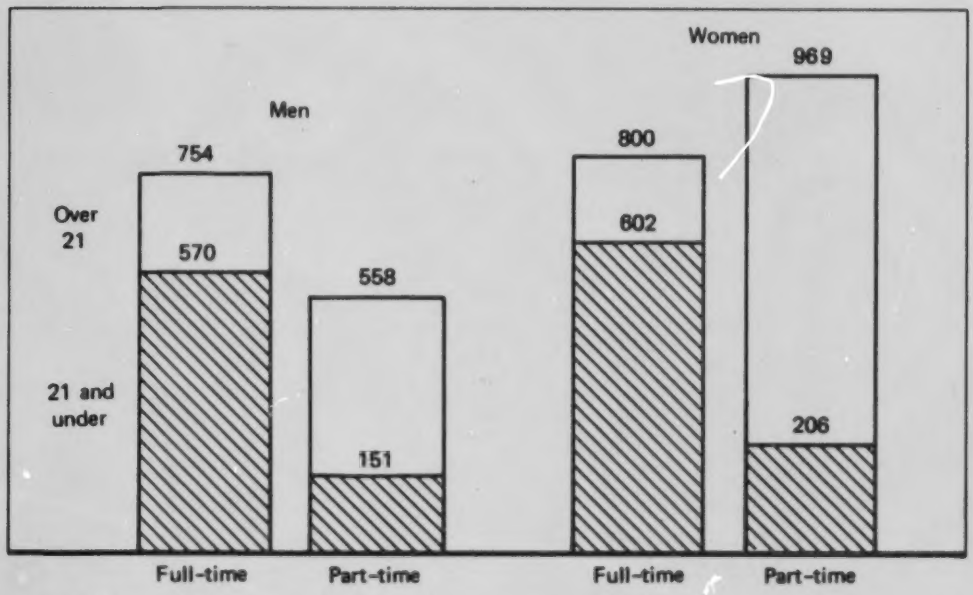
NUMBERS OF MALE STUDENTS BETWEEN 18 AND 21 YEARS

Unfortunately, estimates of the number of males (and females) falling in the 18 to 21 age range vary from one data base to another. NCES, using data on fall enrollments supplied by two-year colleges, estimates that about 4.5 million students were enrolled in the fall of 1980. The Bureau of the Census, using a survey of students in October 1980, estimates this number to be about 3.1 million. The 4.5 million figure is probably an overestimate since many students enrolled at the beginning of the fall term do not complete the term. However, 3.1

million is probably an underestimate because of the difficulty of adequately counting students, particularly the transient, older, and part-time students who constitute a sizable segment of the two-year college population.

The DoD considers males falling between the ages of 18 and 21 years as the prime population for nonprior service (NPS) accessions. In spite of the caveat about the variability of estimates from one data base to another, we bring the best data available (U.S. Bureau of the Census, 1980) to bear on the question of whether there are sufficient numbers of students in the 18 and 21 age group to warrant a recruiting effort in two-year colleges. The reader should keep in mind that the following numbers are probably underestimates of the true values. Of the estimated 3.1 million students enrolled in the fall of 1980, approximately 1.3 million (42 percent) were males and, of these males, approximately 721,000 (55 percent) fall within the targeted age range (Fig. 9). Finally, 79 percent of the men in the targeted age range were full-time students. Recruiting policies for the two-year colleges need not, of course, be targeted to individuals within the 18 to 21 age group. Older students falling within acceptable age ranges for the various branches of the armed forces should also be considered for both the active forces and for the reserves. Including a rough estimate of the number of military eligible males of age 22 and above gives a figure of about one million male students in two-year colleges in 1980 who fell within the targeted age range for NPS accessions, somewhat less than 80 percent of whom were enrolled full time.

Students with prior military service should also be considered in accession policy, perhaps as important sources of manpower for the



SOURCE: Bureau of the Census

Fig. 9 – Breakdown of two-year college enrollments in Fall 1980 (thousands)

reserves. Indeed, in FY81, 370,000 veterans attended two-year colleges under the Post-Korean Educational Assistance Program, and another 120,000 attended vocational and technical schools (Veterans Administration, 1982). These numbers suggest that two-year colleges and vocational schools might serve as locales for recruiting prior servicemen.

PROFILE OF TWO-YEAR COLLEGE STUDENTS

The literature on the characteristics of students in two-year colleges is, unfortunately, not sufficiently detailed for our purposes. What we would like to have, for example, are recent data on male and female students within targeted age ranges enrolled for degrees in each

of the academic and occupational curricula. These data would include large numbers of students and their aptitude test scores, high school grade-point averages, college grade point averages, aspirations, socioeconomic status, and so on. At best, the available statistics provide information on total enrollments by enrollment status (e.g., part-time/full-time, degree/nondegree students) and by demographic characteristics (e.g., age, gender, and ethnic/racial groups). One purpose of the analyses described in the next section is to fill some of this information gap.

There are few relevant data available on the population of two-year college students beyond the overall enrollments by sex and part-time/full-time status.[1] The mean age of the two-year college students is estimated at 28 years and the modal age at 19 years. The age distribution is positively skewed because community colleges, with their broad curricula, serve older people who have enrolled in one or another course out of personal interest, certification requirements, and so on.

Considerably more is known about the characteristics of first-time freshmen in the two-year colleges (Astin et al., 1981; Kanouse et al., 1980). Kanouse et al. (1980) provide data on two-year college freshmen in the fall of 1972. Of particular importance are the aptitude scores, since these are the only objective nationally representative data available on two-year college students in the past 10 years. The mean aptitude scores of male and female students fall between those of four-year college freshmen and the mean scores of individuals in the work force and other occupational tracks, including the military (see Table 4). Similarly, the high school class rank of the two-year college

[1] We focus on nationally representative data because of the great variability in the representativeness and quality of data from state and college level reports.

Table 4

CHARACTERISTICS OF COLLEGE FRESHMEN AND INDIVIDUALS IN OTHER POSTSECONDARY TRACKS, FALL 1972

Variable	College Students			Labor Force	
	Four-year	Two-year	Voc/Tech	Civilian	Military
			Males		
Aptitude	224.5	204.8	194.2	186.1	189.8
Percentile rank in class	66.5	47.8	43.8	35.0	38.6
Father's occupation (Duncan scale)	50.5	43.4	36.6	34.8	37.0
Number of siblings	2.4	2.6	2.8	3.1	3.4
Years of education expected	16.6	15.3	13.7	13.4	14.1
Career aspirations index	59.8	50.1	36.0	35.5	43.8
			Females		
Aptitude	223.7	204.9	195.0	191.6	196.8
Percentile rank in class	75.5	60.9	55.0	52.0	54.7
Father's occupation (Duncan scale)	49.2	43.4	35.9	36.0	31.7
Number of siblings	2.5	2.7	2.8	3.1	3.8
Years of education expected	16.3	14.9	13.4	13.1	14.9
Career aspirations index	63.6	55.5	45.5	42.4	45.8

SOURCE: Kanouse et al. (1980)

student falls between the ranks of four-year college freshmen and students entering other postsecondary tracks. These data suggest that, at least 10 years ago, increasing accessions from two-year colleges might well increase the overall ability level of enlisted men. Note also that, except for four-year college freshmen, two-year college freshmen are on average higher in socioeconomic status (as indicated by the Duncan index of father's occupation) and in both their career and educational aspirations.

Astin et al. (1981) reported that 98 percent of the male and female freshmen in 1981 were high school graduates and another one and a half percent had general educational development (GED) certificates (see Table 5). Roughly half the males and two-thirds of the females reported earning at least a B average. Moreover, 45 percent of the males and 53 percent of the females reported graduating in the top 40 percent of their high school classes.

In addition to criteria regarding high school graduation and ability, the armed forces seek accessions who are single, are 18 to 21 years old, and meet physical qualifications. Virtually all of the freshmen in 1981 were single, over 90 percent fell within the targeted age range, and over 90 percent reported no physical disability.

In sum, the data available on students, particularly for freshmen in two-year colleges, suggest that there is a concentrated market of potential recruits who appear to meet enlistment standards. However, current data are quite limited in detail. For example, there are no nationally representative measures of student ability (aptitude) and we cannot provide information on student characteristics in various

Table 5

CHARACTERISTICS OF FRESHMEN[a] IN TWO-YEAR COLLEGES, 1981

Manpower Needs	Percent of Two-Year College Students	
	Males	Females
High school		
Graduates	98.0	97.9
GED	1.3	1.3
Above average ability		
> B average in high school	47.5	65.1
In top 40% of class	44.8	52.6
Single	99.1	98.3
Prime age (18-21 years)	94.8	92.8
No disability	93.5	93.7

SOURCE: Astin et al. (1981).

[a]Full-time freshmen with no prior college experience

academic programs (e.g., humanities, sciences) and occupational programs (e.g., health, computer science). Moreover, the most detailed data, those on freshmen (Astin et al., 1981), are based on self-reports rather than on objective records. Additional analyses of current data on student characteristics are needed to provide an accurate profile of this recruiting market.

PENETRABILITY OF THE MARKET

In examining accession policies for the two-year college marketplace, ascertaining that the market contains large numbers of persons who meet accession needs is insufficient. Three further questions must be answered: (1) Can the market be penetrated? (2) Are

recruits from this market useful to the military (trainable, able to fill critical occupational specialties, and perform well)? And (3) do these institutions provide an environment conducive to recruiting? We first consider penetrability and then discuss the other two topics in the remainder of this section.

By penetrability we mean the market's potential for yielding higher enlistment rates under alternative recruitment strategies. We assume that most students consider their occupational choices rationally and ask whether the military is among their alternatives. We also recognize that occupational choice depends on positive (e.g., monetary) and negative (e.g., unemployment in the civilian labor market) incentives which are, themselves, uncertain events in the future. And finally, we believe that, in choosing a particular occupation, the choice depends on whether the occupation is consistent with students' attitudes and goals and whether the occupation is sufficiently valued to override costs associated with choosing it. To penetrate the two-year college market, DoD can provide (a) information leading more students to consider military service as a possible career path; (b) incentives (e.g., pay, travel, occupational training) that make military service attractive to some of these students; and (c) educational benefits to assist students in meeting other career and educational goals.

Unfortunately, data on the penetrability of the two-year college market are sparse. There are no published studies that report attempts by the military to directly recruit from this marketplace (see Sec. III for a recent, as yet unpublished study). And only two studies (Fisher et al., 1975; Korman et al., 1973) have indirectly examined the military's ability to penetrate the market by asking students on

two-year college campuses whether they might join the military and which, of a small set of alternative recruiting incentives, might induce them to do so. Since the Fisher study is more recent and encompasses the findings of the Korman study, we review it in some detail.

A Market Survey

The goals of the Fisher et al., 1975, study were to (a) estimate the Navy's potential for enlisting male, two-year college students, (b) determine whether enlistment potential varied systematically with demographic characteristics, and (c) determine students' preferences for alternative incentives. The major part of the study was a 1975 survey of 807 male students 25 years of age or younger. To select respondents who were representative of this population, a sample of 20 colleges was drawn from all two-year colleges with probabilities proportional to enrollment. At highly trafficked locations within each college, "every n^{th} male student" was selected for screening (not more than 25 years of age, not obviously physically impaired, and willing to participate in the study) and given an interview appointment. In this way, approximately 40 students at each college were interviewed.

The survey included questions on (a) intention to enlist, (b) potential effectiveness of various recruiting incentives, (c) media exposure, (d) recruiter contact strategies, (d) verbal ability, and (e) demographic characteristics. Table 6 provides data on verbal ability and demographic characteristics of the sample.

Table 6

CHARACTERISTICS OF A SAMPLE OF TWO-YEAR COLLEGE MALE STUDENTS, SPRING 1975

Variable	Percentage of Sample
Age 18-21 years	84
Mental ability quartile:	
First (highest)	40
Second	34
Third	18
Fourth	8
High school graduates	98
12-14 years of education	90
Single	84
Family income:	
Below $10,000	18
$10,000 - $19,999	39
$20,000 and above	26
Refused to respond	17
Employment Status:	
Full-time	8
Part-time	50
Area resident	80
College program:	
Transfer	57
Occupational	20

SOURCE: Fisher et al. (1975).

Intention to Enlist

When interpreting data on enlistment intentions, it is important to understand the relation between plans and behavior. As a proxy, consider the relation between sample respondents' educational aspirations and their behavior. When asked about their educational aspirations, 14 percent of the sample reported that they planned to complete the associate degree, whereas 75 percent reported that they expected to attend a four-year college or university and/or graduate school.

> In spite of the fact that 75% of the sample aspires to a four-year education (or more), only one-third have applied to a four-year college and only 26% have been accepted. . . . Even fewer students (16%) have applied for financial aid although . . . many . . . students reported that they could not afford a four-year college education (Fisher et al., 1975, p. 69).

These findings are consistent with others in the literature (Cohen and Brawer, 1982) and with data reported by Astin et al. (1981) where roughly 77 percent of the entering, two-year college freshmen class of 1981 said they intended to earn at least a bachelor's degree, 30 percent said they expected to do so at two-year college (!) and only 14 percent said that "chances are very good that they will transfer to another college." In sum, two-year college students tend to be somewhat unrealistic planners and this should be taken into account in interpreting enlistment intentions.

When asked about their overall attitude toward the military, 26 percent were favorable, 43 percent were "half and half," and 29 percent were unfavorable (2 percent had no opinion). Their immediate plans, however, tended not to focus on military service: 68 percent intended

to continue their education, 33 percent planned to go to work, and 1 percent planned to enter the armed forces. Asked how likely they were to enlist in the armed forces, 1 percent indicated that they would definitely enlist, 9 percent responded "probably," 34 percent responded "probably not," 42 percent responded "definitely not," and 14 percent "didn't know." Of the 80 students (10 percent) considering enlisting, fewer than eight said they planned to enlist within the next six months, approximately eight (or 1 percent of the total sample) said they planned to enlist six months to a year from the interview, and 64 percent (8 percent of the total sample) said they planned to enlist at some future time.

Students were then asked, "If you were to join or enlist, which branch of the Active Service would you be most likely to enter?" Thirty-five percent responded Air Force, 24 percent Navy, 12 percent Coast Guard, 11 percent Army, 8 percent Marine Corps, and 10 percent "don't know." Of those 80 students planning to enlist, 30 percent said they would choose the Air Force, 28 percent the Navy, and 23 percent the Army. Among the most probable accessions, then, the distribution of preferences was fairly flat. Each student was also asked to indicate the likelihood that he would join the Reserve or National Guard. Eleven percent said they definitely or probably would join, 74 percent said they definitely or probably would not join, and 15 percent "didn't know."

When asked whether they planned to enter the military services as an officer or an enlisted man, 55 percent selected officer while 33 percent selected enlisted. Academic transfer students selected officer at a greater rate (65 percent) than did students in occupational

programs (36 percent). Moreover, when provided a description of Navy enlistment programs and asked what programs interested them, the three that generated the most interest were the three officer programs (e.g., NROTC).

Among the reasons given for enlisting, those that were important to two-thirds or more of the students were choice of branch, opportunity to learn a skill or technical trade, travel, advanced education and retirement benefits. Reasons not to enlist were: other plans, 12 percent; suppression of individual freedom, 9 percent; and conscientious objectors, 8 percent.

Recruiting Incentives

Students said that they would be more favorably disposed to enlist if (a) they had an option to leave the military after six months if they were not satisfied (84 percent); (b) they received educational benefits of $270 per month for four years (80 percent); (c) promotions and pay were based on ability regardless of race, creed, or religion (70 percent); (d) the Navy helped them find a job when they completed their tours of active duty (67 percent); and (e) they received a bonus of $2,000 for joining the Navy if they had some skill that is in short supply (60 percent).

Use of the Media for Recruitment

Respondents reported being exposed most to a direct mailing (74 percent); then to television, magazines, and billboards (55 percent); then to "other recruiting literature" and radio (44 percent); and lastly to newspapers and recruiters either in person or by phone (25-30 percent). When asked about their preferred recruiting source, 54

percent preferred to talk to a Navy recruiter and 25 percent preferred to read Navy literature. Forty-one percent of the students preferred talking to the recruiter in the recruiting office, 21 percent preferred talking at school, 16 percent had no preference, and 14 percent preferred talking at home. Thirty-five percent preferred talking to an enlisted man, 31 percent to an officer, and 25 percent had no preference.

In summary, the Fisher et al. study indicates that while, on average, two-year students in the sample probably meet accession standards, few consider the military as an occupation after completing school. Nevertheless, if asked directly whether they planned to enlist, about 10 percent said "possibly" but at some later date. The most important enlistment incentives for this sample were an early opportunity to leave the service and a financial bonus. With respect to recruiting strategies, most had been exposed to direct mailings and preferred meeting recruiters in recruiting offices.

In evaluating these results, a number of factors should be kept in mind. The study was conducted seven years ago in an environment considerably different from that of today. The data reported in this study refer to enlistment intentions, not actual enlistment behavior. Indeed, few students in two-year colleges in 1975 actually enlisted in 1976. Moreover, data presented by Fisher et al. attest to the fact that these students are unrealistic planners. Finally, the subjects participating in this study were volunteers. We do not know how many refused to participate in the study, what their responses would have been, and how those responses might have changed the findings. Nevertheless, the data provide some information for developing

incentives and recruiting methods that might be used to penetrate this market.

In the absence of definitive studies directly testing the military's ability to penetrate the two-year college market, and with the paucity of studies such as Fisher et al., we look for other indicators of penetrability. We consider the key indicators to be (a) the past enlistment behavior of two-year college students and (b) evidence of flux in the plans and behavior of these students. The latter would presumably indicate how committed the students were to the educational and occupational plans that led them not to enlist in the military right after high school.

The data on past enlistment behavior are not encouraging. First, students in two-year colleges have already opted for education rather than the military after high school graduation. Second, only 6 percent of the 1981 NPS accessions had a year or more of college (see Sec. III). Third, out of about 11,000 students between the ages of 17 and 22 in the National Longitudinal Study of Labor Force Behavior (Borus, 1982), 196 males and 257 females were enrolled in two-year colleges in 1979, and 282 males and 397 females were enrolled in 1980. Those in two-year colleges were asked, "Do you think, in the future, that you will definitely try to enlist, probably try to enlist, probably not try to enlist, or definitely not try to enlist in the military?" Only three males and one female said that they would definitely enlist, and 19 males and 30 females said they would probably try to enlist. For additional data, see Table 7. Finally, only 0.6 percent of the two-year college freshman class of 1981 reported that they planned on a military career (Astin et al., 1981).

Table 7

TWO-YEAR COLLEGE STUDENTS' RESPONSES TO A QUESTION ON ENLISTMENT PROPENSITY

Do you think, in the future, that you will[a]	Enrolled in Two-Year Colleges: Number (%) of Males 1979	1980	Number (%) of Females 1979	1980
Definitely try to enlist	3(2)	3(2)	1(0)	1(0)
Probably try to enlist	13(7)	19(7)	19(7)	30(8)
Probably not try to enlist	61(31)	78(28)	90(35)	116(29)
Definitely not try to enlist	86(44)	120(43)	129(50)	210(53)

SOURCE: Borus (1982).

[a]Other alternatives included physical or mental requirements not met, presently enlisted, and so on. These additional alternatives account for all two-year college respondents.

Before overinterpreting these findings to mean that the two-year college market is impenetrable, several important factors should be considered. First, the military has not made a concerted effort to recruit from this market. In contrast, high schools have been the target for enlistees, and four-year colleges and universities have been the target for commissioned officers. Second, recruiters are unlikely to tap the two-year college market because it is a new, unknown territory for them. Third, as male youth (18 to 21 years of age) sort themselves into alternative occupational tracks, the largest numbers enter the labor market and the fewest enter two-year colleges (Fig. 10).

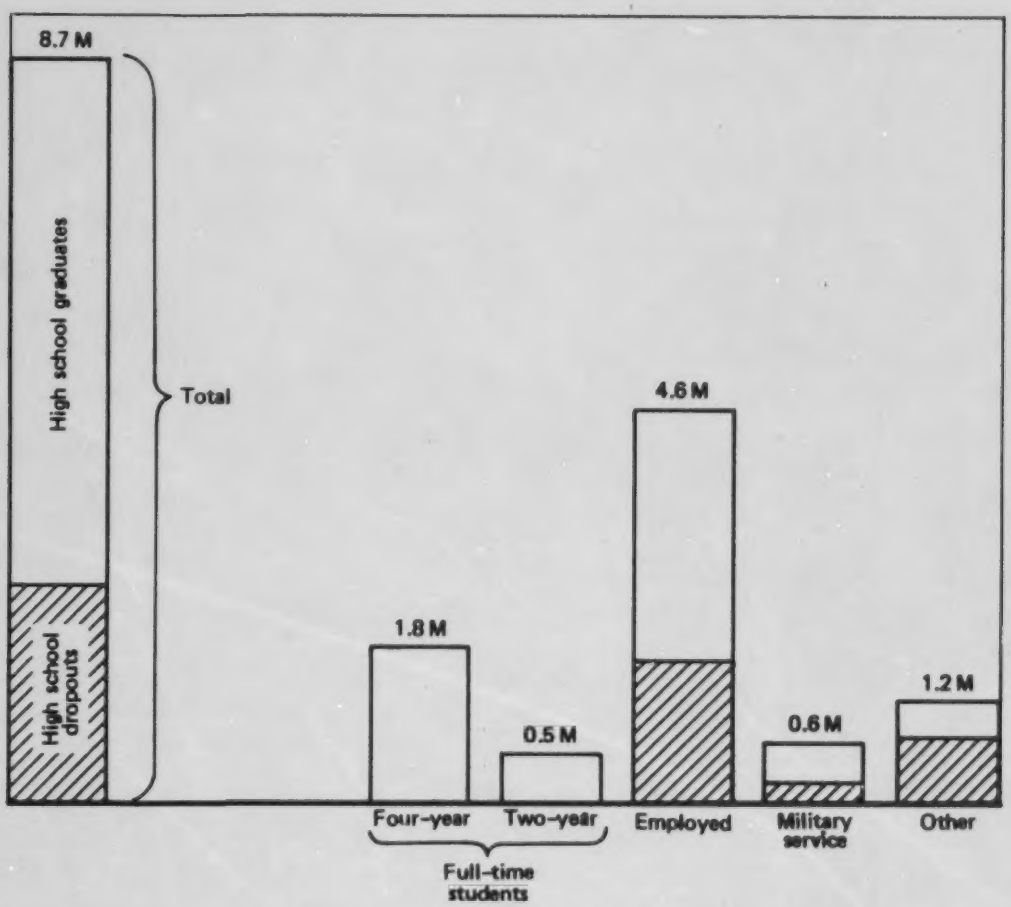


Fig. 10 – Main activities, men of age 18 to 21 (Fall 1980)

There are, however, some indicators that lead us to search for evidence of penetrability, especially when plans and occupational-choice

behavior are considered. While approximately 75 percent of the two-year college freshmen intend to earn bachelor's degrees, transfer rates from two- to four-year colleges are very low (about 6 percent of entering students complete two years and then transfer) (Cohen and Brawer, 1982). Educational and occupational aspirations of many two-year college students are in a state of flux (Baird, 1971; Clark, 1960, 1980; Pincus, 1980), which suggests that occupational career choices made after high school might change and include the military. Instability in the career paths selected by these students leads to the observed curricular mobility in two-year colleges (see, e.g., Cohen and Brawer, 1982). Approximately 60 percent of the 1981 freshmen indicate "some" or "major" concern about financing college education. And current high unemployment rates may increase the attractiveness of the military as an alternative occupational path, especially to those finishing vocational training that corresponds with critical military occupational specialties. Heretofore, the military has not systematically attempted to recruit from this market. Appropriately designed recruiting strategies and enliistment incentives might increase accessions of students with differing occupational specialities and reasons for enlisting.

On the basis of the literature review, the following tentative conclusions can be drawn about market penetrability: (a) students in two-year colleges have not been a major source of accessions in the past, (b) few freshmen in two-year colleges appear to consider military service as an occupational option, (c) students in two-year colleges often change their educational and occupational plans, and (d) present research has not adequately addressed the penetrabilty of the two-year college market.

UTILITY OF ENLISTEES FROM TWO-YEAR COLLEGES

Utility refers to the service performance of recruits from two-year colleges. Some common measures of utility are (a) trainability (ability to complete occupational training satisfactorily and on schedule), (b) willingness and capacity to serve in critical occupational specialties, (c) productivity, (d) leadership, and (e) freedom from disciplinary actions.

Typically, recruiting policy focuses on whether a particular market meets major recruiting goals, especially that of recruiting sufficient numbers of high-school graduates of above average ability. This goal is based on the premise that, on average, high-quality enlistees perform better in the military than individuals with lesser qualifications. While this premise seems plausible and a high proportion of the students in two-year colleges would qualify as high-quality recruits, those who actually enlist constitute only a small minority (and may be atypical) of the two-year college population. Thus, questions about the potential utility of recruits from the two-year colleges require investigation.

Unfortunately, no research has been reported on the utility of two-year college recruits. In Sec. III, we bring some recent data from DMDC's 1981 accessions file to bear on the question of utility of two-year college recruits.

RECRUITING ENVIRONMENT IN TWO-YEAR COLLEGES

Counseling and guidance is a major function of over 90 percent of the two-year colleges (Cohen and Brawer, 1982). The growth of this function is based on

> the contention...that community college students are different from the traditional college groups, the affective is as important as the cognitive, students need help in moving into the college and out again into jobs and other schools, and individualized instruction through counseling and other nonclassroom-based activities is essential (Cohen and Brawer, 1982, p. 171).

Thus, an institutional mechanism currently exists through which recruiting might be conducted.

A second characteristic of two-year colleges leads us to believe that these institutions would provide an environment conducive to recruiting: they are quite responsive to changes in the economic environment. In 1963, for example, the Vocational Education Act broadened the criteria for federal aid to schools, and Congress appropriated $43 million in 1968, $707 million in 1972, and $981 million in 1974. "On this surge of monies occupational education swept into the [two-year] colleges in a fashion dreamed of and pleaded for but never before realized by its advocates" (Cohen and Brawer, 1982, p. 192). The impact of this funding is reflected in the increasing share of associate degrees awarded to graduates from occupational tracks in these colleges (see Fig. 7).

In the current economic environment--one of recession, decreasing federal involvement in education, and fiscal retrenchment in states' educational funding (McDonnell and McLaughlin, 1982)--we would expect to see two-year colleges seeking alternative funding sources such as the military.

Two-year colleges are also attractive recruiting environments because they form a concentrated market; 50 percent of the institutions and 65 percent of the enrollments are concentrated in 10 states. Most of the students satisfy the military's enlistment standards.

There are, however, several factors that indicate recruiting problems. One is the fact that 60 percent of the students attend two-year colleges only part-time. Furthermore, even full-time students are not on campus all of the time, so that recruiters may have difficulty locating students on campuses. However, if recruitment is coordinated with the counseling and guidance office on the campus, this problem might be overcome.

A second potential problem is that, to most recruiters, the population of two-year college students is unfamiliar. Recruiters who have not attended college may be reluctant to recruit in this "unknown" market. Coordination of recruiting with the institution should alleviate this problem. Further, providing recruiters with specific information on these students or permitting recruiters to collect this information from students should prove helpful. Finally, using educational specialists--past teachers, principals, and counselors--as intermediaries to establish a link between the schools and the recruiters may further alleviate the entry problem.

In sum, the facts that two-year colleges are adaptive to the economic environment and stress career counseling and guidance lead us to believe that these institutions will be receptive to recruiting on their campuses as long as recruiting serves their goals as well as the military's. By this caveat we mean that two-year colleges are likely to support recruiting as long as the military does not compete with them for students.

III. ANALYSIS OF THE MARKET PLACE: NEW DATA

The literature suggests that the two-year colleges might provide fruitful locales for recruitment in that approximately a million male students meet enlistment requirements, this market has not been penetrated in the past, and the educational and occupational plans and behavior of many students are in a state of flux. But the literature lacks adequate data on important characteristics of these students such as objective indicators of their aptitude (e.g., cognitive test scores), the penetrability of the market, and the utility of two-year college recruits to the military.

To bring additional data to bear on issues of quality, penetrability, and utility, analyses of two very recent data sets--High School and Beyond and the DMDC accessions file for FY81--were undertaken. Unfortunately, neither data set is ideally suited to the two-year college market. The DMDC file does not provide information specifically on enlistees from two-year colleges. Rather, it provides information on enlistees with one or more years of college. The enlistees with one or two years of college certainly include large numbers of two-year college students, and we shall assume that the characteristics of this group will serve as approximations for the characteristics of the two-year college students who join the military.

High School and Beyond (HS&B) is limited in a different way. It provides data on 1980 high school seniors,[1] including their post-secondary plans, but as yet follow-up data are not available to

[1] It also provides data on sophomores.

ascertain which students actually attended two-year colleges. Nevertheless, we provide an empirical justification for using data on high school seniors planning to enter two-year colleges as proxies for data on students in two-year colleges. By doing so, we avail ourselves of a very rich data set, one well suited to providing a detailed profile of prime-age students in the two-year college marketplace.

PROFILE OF STUDENTS IN TWO-YEAR COLLEGES: METHODOLOGICAL CONSIDERATIONS

To provide a current, detailed profile of the entering two-year college student, we have to justify using seniors who plan to enter these institutions in the spring of 1980 as proxies for those who actually entered in the fall of 1980. In short, we need to demonstrate that those high school students who plan to attend two-year colleges "look like" those who actually do attend. To this end, we used the National Longitudinal Survey of the High School Class of 1972 (NLS72)--the data set most closely comparable to HS&B in terms of the student population (high school seniors), the attributes measured, and the wording of questions. (In fact, HS&B was designed to overlap closely with NLS72.) We compared the characteristics of high school seniors in the spring of 1972 who planned to go to two-year colleges (the "planners") with the "doers," those who actually were enrolled in two-year colleges in the fall of 1972.

The means of the planners ($\bar{x}_P$) and doers ($\bar{x}_D$) on demographic, academic, socioeconomic and attitude/aspiration variables are given in Tables 8a and 8b. These data are for male and female seniors planning to enter one of three postsecondary education tracks (four- or two-year colleges or vocational/technical schools), military service, or the civilian work force. We show data not only on two-year college planners

Table 8a

COMPARISON OF ATTRIBUTES OF NLS72 PARTICIPANTS WHO PLANNED TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES WITH THOSE WHO DID UNDERTAKE THOSE ACTIVITIES: MEANS AND STANDARDIZED DIFFERENCES IN MEANS FOR MALES

Attribute	Postsecondary Education									Military Service			Civilian Labor Force		
	Four-year			Two-year			Voc/Tech								
	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ
(a) Accession Standards															
General Ability	56.46	57.20	-0.09	51.59	51.38	0.03	46.72	48.25	-0.18	47.92	46.87	0.11	44.28	45.80	-0.17
Age	17.64	17.62	0.03	17.73	17.71	0.03	17.87	17.77	0.14	17.90	17.95	-0.07	17.95	17.92	0.04
Single	1.00	1.00	0.01	1.00	1.00	0.00	0.98	0.99	0.02	0.99	0.99	-0.05	0.97	0.97	0.04
(b) High School Education															
Semesters of:															
Foreign Language	3.34	3.40	-0.03	2.59	2.71	-0.06	1.44	1.97	-0.31	1.88	1.74	0.07	1.28	1.44	-0.09
Mathematics	5.16	5.24	-0.05	4.35	4.47	-0.07	3.70	4.18	-0.25	3.87	3.94	-0.04	3.32	3.40	-0.05
Science	4.72	4.83	-0.06	3.96	3.96	-0.00	3.24	3.81	-0.33	3.44	3.45	-0.01	3.07	3.14	-0.04
Grade Point Avg.	2.55	2.62	-0.08	1.97	1.99	-0.02	1.66	1.90	-0.28	1.77	1.68	0.09	1.46	1.53	-0.09
(c) Mental Ability															
Mathematics	57.50	58.26	-0.09	52.69	52.70	-0.01	48.84	50.32	-0.17	49.06	48.02	0.11	45.82	47.23	-0.16
Verbal Ability	55.57	56.25	-0.08	51.04	50.76	-0.03	46.13	47.57	-0.16	47.62	46.65	0.10	44.09	45.55	-0.16
(d) Demographics															
Family Inc. (1000)	13.69	14.07	-0.06	12.04	12.52	-0.08	10.09	10.24	-0.03	10.29	9.83	0.08	10.02	10.41	-0.07
Num. of Siblings	2.51	2.45	0.04	2.61	2.60	0.01	2.98	2.72	0.17	3.22	3.43	-0.13	3.05	3.04	0.00
Father's Occup.	49.57	50.73	-0.05	42.60	42.93	-0.01	35.63	35.55	0.00	37.70	37.97	-0.05	33.90	35.44	-0.07
Mother is Prof.	0.14	0.15	-0.02	0.13	0.12	0.02	0.08	0.11	-0.09	0.06	0.07	-0.05	0.06	0.07	-0.01
Father's Educ.	13.56	13.78	-0.07	12.71	12.70	0.00	11.56	11.71	-0.06	12.17	12.03	0.06	11.44	11.67	-0.11
Mother's Educ.	12.94	13.05	-0.05	12.41	12.42	-0.01	11.77	12.01	-0.13	11.90	11.86	0.02	11.55	11.70	-0.09
Proportion:															
Black	0.10	0.09	0.03	0.08	0.08	0.00	0.14	0.12	0.04	0.14	0.20	-0.17	0.13	0.11	0.06
Hispanic	0.03	0.02	0.05	0.06	0.07	-0.05	0.03	0.03	-0.02	0.08	0.07	0.06	0.05	0.05	0.01
(e) Aspirations															
Career Aspirations	59.66	59.80	-0.01	49.17	49.99	-0.04	33.95	35.99	-0.14	42.48	43.84	-0.09	33.00	35.49	-0.14
Prof. Aspirations	0.70	0.71	-0.01	0.43	0.45	-0.05	0.09	0.14	-0.16	0.10	0.20	-0.30	0.13	0.17	-0.12
Yrs. Ed. Expected	16.58	16.56	0.02	15.17	15.33	-0.10	13.14	13.69	-0.61	14.01	14.14	-0.07	12.99	13.39	-0.26
Sample Size															
N	2519	2249		1153	1043		571	377		431	364		1880	2540	

NOTE: $\Delta = (\bar{x}_P - \bar{x}_D)/s_P$

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Table 8b

COMPARISON OF ATTRIBUTES OF NLS72 PARTICIPANTS WHO PLANNED TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES WITH THOSE WHO DID UNDERTAKE THOSE ACTIVITIES: MEANS AND STANDARDIZED DIFFERENCES IN MEANS FOR FEMALES

Attribute	Postsecondary Education									Military Service			Civilian Labor Force		
	Four-year			Two-year			Voc/Tech								
	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ	$\bar{x}_P$	$\bar{x}_D$	Δ
(a) Accession Standard															
General Ability	56.37	56.99	-0.07	51.63	51.39	0.03	47.57	48.48	-0.11	47.07	48.97	-0.19	45.93	47.42	-0.17
Age	17.56	17.56	0.00	17.59	17.58	0.02	17.68	17.63	0.08	17.94	17.71	0.26	17.73	17.72	0.03
Single	0.99	0.99	0.00	0.99	1.00	0.06	0.98	0.97	0.06	0.98	1.00	0.13	0.95	0.95	-0.00
(b) High School Education															
Semesters of:															
Foreign Language	3.84	3.90	-0.03	2.92	3.01	-0.04	2.17	2.55	-0.19	1.98	2.89	-0.49	1.84	2.00	-0.09
Mathematics	4.43	4.51	-0.04	3.62	3.74	-0.07	3.10	3.34	-0.15	3.15	4.33	-0.66	2.84	2.87	-0.01
Science	4.04	4.09	-0.03	3.42	3.45	-0.02	2.99	3.25	-0.17	2.97	3.83	-0.54	2.64	2.72	-0.05
Grade Point Avg.	2.89	2.96	-0.07	2.40	2.39	0.01	2.14	2.19	-0.05	2.27	2.54	-0.32	1.99	2.11	-0.12
(c) Mental Ability															
Mathematics	54.99	55.60	-0.07	50.26	50.07	0.02	46.17	47.26	-0.13	45.46	48.71	-0.34	44.63	45.94	-0.09
Verbal Ability	56.45	57.02	-0.07	52.04	51.80	0.03	48.30	49.07	-0.09	47.91	49.14	-0.13	46.74	48.19	-0.16
(d) Demographics															
Family Inc. (1000)	12.96	13.33	-0.05	11.38	11.36	0.00	9.19	9.37	-0.03	8.34	8.09	0.04	9.08	9.62	-0.10
Num. of Siblings	2.56	22.50	0.04	2.68	2.69	-0.01	2.90	2.82	0.05	3.69	3.73	-0.03	3.18	3.10	0.05
Father's Occup.	48.14	48.89	-0.03	43.20	43.90	-0.03	35.83	36.65	-0.04	32.68	32.62	0.00	34.27	36.45	-0.11
Mother is Prof.	0.17	0.18	-0.03	0.10	0.12	-0.05	0.07	0.08	-0.07	0.08	0.10	-0.05	0.06	0.06	0.01
Father's Educ.	13.55	13.71	-0.05	12.65	12.66	-0.00	11.68	11.76	-0.03	11.18	10.85	0.15	11.44	11.63	-0.09
Mother's Educ.	12.97	13.12	-0.07	12.36	12.32	0.03	11.77	11.96	-0.11	11.82	11.31	0.29	11.43	11.55	-0.07
Proportion:															
Black	0.14	0.13	0.04	0.09	0.11	-0.08	0.19	0.16	0.06	0.19	0.21	-0.05	0.15	0.11	0.11
Hispanic	0.03	0.03	0.03	0.05	0.05	0.00	0.05	0.04	0.06	0.00	0.07	∞	0.04	0.04	-0.00
(e) Aspirations															
Career Aspirations	63.46	63.60	-0.01	54.84	55.52	-0.04	42.32	45.59	-0.20	47.24	45.80	0.13	39.41	42.33	-0.22
Prof. Aspirations	0.81	0.82	-0.01	0.57	0.58	-0.04	0.23	0.33	-0.22	0.11	0.10	0.04	0.15	0.22	-0.22
Yrs. Ed. Expected	16.31	16.28	0.03	14.73	14.87	-0.10	13.19	13.45	-0.27	13.72	14.86	-0.61	12.66	13.08	-0.27
Sample Size															
N	2464	2208		1153	943		817	672		62	14		2083	2133	

NOTE: $\Delta = (\bar{x}_P - \bar{x}_D)/s_P$

but also on students planning to enter other tracks because some analyses will compare students planning to enter two-year colleges in 1980 with students planning to enter other tracks in order to evaluate their "quality." The delta statistic, denoted by Δ, is a measure in standard deviation units of the magnitude of the mean difference between planners and doers. It provides a summary of the degree to which planners look like doers. Specifically, delta is the difference between the means of the planners and doers divided by the standard deviation of the planners.[2] The standard deviations of the measures may be found in Table A.1a and A1.b.

Among the two-year college students, the planners look very much like the doers. The deltas range from -0.10 to +0.03 for men and from -0.10 to +0.07 for women. The deltas for the four-year college planners and doers are also uniformly small, all less than 0.10 in absolute value. In contrast, there are some sizable differences in means between the planners and doers in the vocational/technical track, where the deltas in absolute value run as high as 0.61 for males and 0.27 for females. Using means of male planners to estimate the actual means for students in vocational/technical schools leads to an underestimate of the mean number of semesters of foreign language, mathematics, and science, and an underestimate of their mean educational aspirations.[3]

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[2] A delta of 0.20 is considered a small effect, 0.50 is considered a medium effect, and 0.80 is considered a large effect.

[3] If one wishes, the HS&B data can be adjusted for under- or overestimation using the mean difference between planners and doers. For example, the mean difference between the educational expectations of male planners and doers was 13.14 - 13.69 = -0.55. This value, -0.55, could be added to the mean educational aspirations of male vocational/technical school planners in the HS&B data to correct for differences in overlap.

For seniors planning to enter military service or the civilian work force, male planners look like male doers. (Professional aspirations are slightly underestimated by the mean of men planning to enter the military, and educational aspirations are slightly underestimated by using the mean for men planning to enter the civilian work force.) The charactertistics of women planning to enter the civilian labor force are similar to those for the doers, except that planners have slightly lower educational expectations, on average. In contrast, women planning to enter the military are different from those who do; however, our sample sizes are small in this case, with only 62 planners and 14 doers.

In summary, the analysis of NLS72 indicates that the mean characteristics describing high school seniors planning to enter different educational and occupational career tracks provide remarkably good proxies for the actual means of seniors who do enter these tracks. There are two exceptions to this rule: men planning to enter vocational/technical schools and women planning to enter the military tend to differ from those who enter the tracks in both high school coursework and educational expectations.

One last methodological consideration remains: Is there any reason to believe that the relation between the characteristics of planners and doers in 1972 holds for planners and doers in 1980? Although we cannot answer this question definitively (if we could, we would not have had to use data from 1972), a comparison of the attributes of the 1972 planners with the 1980 planners shows that, on average, they are quite similar (compare the data in Tables 8 and 9). The attributes of two-year college planners in 1972 and 1980, for example, were quite similar:

general ability (51.59 vs. 50.50); age (17.73 vs. 17.54); single (1.00 vs. 1.00), semesters of math (4.35 vs. 4.33) and science (3.96 vs. 3.60); and number of siblings (2.61 vs. 2.92). The planners of 1972 and 1980 do differ, however, on several variables where they might be expected to because of inflation (e.g., family income) or changes in college requirements (semesters of foreign language). We conclude, then, that data on the characteristics of planners in the spring of 1980 provide good proxies for data on the characteristics of doers in the fall of 1980.

PROFILE OF TWO-YEAR COLLEGE STUDENTS' CHARACTERISTICS

In using data on planners from HS&B, we are able to provide a current, detailed profile of two-year college students falling within the prime age range for NPS accessions. We first provide a profile of the attributes of those students with respect to enlistment standards, high school curricular background, ability, and demographic characteristics.

Accession Goals

The military seeks to recruit male high school graduates aged 18 to 21 years who are above average in aptitude, single, and in good physical condition.[4] On average, males planning to enter two-year colleges in 1980 met these standards. They scored higher on aptitude than did students planning to enter military service or the civilian work force, they averaged 17.5 years of age in the spring of their senior year of high school (or would be roughly 19.5 years after two years of college),

[4] In reporting data on the quality of two-year college students, we emphasize the data for males because of the military's greater need, in numbers, for males than for females, and for the sake of brevity.

and they are predominantly single and in sound physical condition (Table 9a, see also Table 9b; standard deviations may be found in Table A.2a and A2.b).

A comparison of students planning to enter two-year colleges with those planning to enter vocational/technical postsecondary schools shows that those planning collegiate academic programs in the two-year colleges were above average in aptitude and slightly higher in aptitude than those planning vocational programs, who were, in turn, slightly higher than those planning to enter vocational/technical schools (see Table 10a and 10b; standard deviations may be found in Table A.3a and A3.b).

High School Education

Academically, male two-year college planners fall in between four-year college planners and those planning to enter the military service or the civilian labor force. They have a B- grade point average (women have a B average), and about the same number of semesters of English, foreign language, mathematics, and science as do the military planners and more than those planning to enter the civilian labor force (see Table 9a). The proportion of two-year college planners enrolled in physics, chemistry, and computer courses is about the same as that of military planners and somewhat greater than that of the civilian labor force planners. (A smaller proportion of two-year college women planners was enrolled in physics and computer courses.) Finally, men planning to enter two-year colleges tended to spend slightly more time on homework in high school than did military planners and considerably more time than did civilian labor force planners.

Table 9a

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES (1980): MEANS FOR MALES

	College		Military Service	Civilian Labor Force	All
	Four-year	Two-year			
(a) Accession Standards					
General Ability	56.56	50.50	48.96	45.56	50.83
Age	17.46	17.54	17.64	17.66	17.56
Single	1.00	1.00	1.00	0.99	0.99
Limiting Physical Condition	0.05	0.07	0.06	0.09	0.07
(b) High School Education					
Grade Point Average	3.15	2.69	2.60	2.43	2.75
Hours of Homework	4.75	3.18	2.85	2.10	3.32
Semesters of:					
English	6.11	5.76	5.77	5.66	5.85
Foreign Language	2.38	1.48	1.41	0.81	1.53
Mathematics	5.25	4.33	4.13	3.60	4.37
Science	4.60	3.60	3.56	2.94	3.70
Classes in:					
Physics	0.48	0.22	0.23	0.13	0.28
Chemistry	0.70	0.40	0.32	0.20	0.42
Computers	0.19	0.15	0.13	0.08	0.13
(c) Dimensions of Ability					
Vocabulary	55.07	49.75	49.04	46.25	50.39
Reading	54.79	50.02	48.77	45.25	49.95
Verbal Ability	55.81	50.11	49.04	45.67	50.54
Mathematical	57.00	51.38	48.87	46.24	51.34
Picture-Number	51.37	49.28	48.20	47.32	49.25
Mosaic Comparisons	51.16	49.58	47.77	47.35	49.24
3-D Visualization	53.44	51.27	51.21	48.38	51.03
(d) Indicators of Responsibility					
ROTC	0.02	0.04	0.11	0.03	0.04
Varsity Athletics	0.60	0.49	0.42	0.37	0.47
Other Athletic Teams	0.62	0.52	0.52	0.43	0.52
Honorary Clubs	0.27	0.10	0.11	0.05	0.14
Student Government	0.25	0.15	0.11	0.09	0.16
Have Job	0.58	0.64	0.60	0.71	0.64
Days Absent	2.20	2.96	3.80	3.86	3.10
Suspended	0.10	0.15	0.24	0.23	0.17
Trouble with Law	0.03	0.06	0.07	0.09	0.07
(e) Demographics					
Family Income (thousands)	27.36	23.55	18.86	21.29	23.80
Importance of Aid	2.14	2.18	2.18	2.16	2.16
Family Owns Home	0.83	0.82	0.72	0.80	0.81
Number of Siblings	2.76	2.92	3.52	3.27	3.04
Father is Professional	0.25	0.15	0.10	0.09	0.16
Mother is Professional	0.25	0.19	0.19	0.13	0.19
Father's Education	13.51	12.89	12.63	12.42	12.94
Mother's Education	14.45	13.54	12.83	12.65	13.51
Proportion:					
White	0.75	0.71	0.61	0.74	0.73
Black	0.12	0.10	0.20	0.11	0.12
Hispanic	0.08	0.13	0.13	0.10	0.10
Oriental	0.03	0.03	0.02	0.01	0.02
Indian	0.01	0.03	0.03	0.03	0.02
Other	0.01	0.01	0.01	0.01	0.01
Sample size					
N	4741	1568	694	4102	12615
Percent	37.6	12.4	5.5	32.5	32.5

Table 9b

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES (1980): MEANS FOR FEMALES

	College		Military	Civilian	
	Four-year	Two-year	Service	Labor Force	All
(a) Accession Standards					
General Ability	53.75	49.13	45.57	44.80	49.25
Age	17.36	17.42	17.54	17.54	17.45
Single	1.00	0.99	1.00	0.98	0.99
Limiting Physical Condition	0.04	0.04	0.05	0.08	0.06
(b) High School Education					
Grade Point Average	3.31	2.97	2.76	2.70	2.99
Hours of Homework	5.30	3.89	3.30	3.03	4.09
Semesters of:					
English	6.12	5.89	5.81	5.71	5.91
Foreign Language	2.68	1.87	1.40	1.04	1.86
Mathematics	4.65	3.82	3.86	3.20	3.90
Science	4.03	3.21	3.12	2.59	3.29
Classes in:					
Physics	0.25	0.10	0.19	0.08	0.15
Chemistry	0.60	0.35	0.26	0.15	0.37
Computers	0.12	0.11	0.13	0.12	0.12
(c) Dimensions of Ability					
Vocabulary	52.81	49.04	45.98	45.75	49.21
Reading	53.27	49.63	46.93	45.62	49.52
Verbal Ability	53.59	49.37	46.01	45.43	49.48
Mathematical	53.27	48.64	45.29	44.24	48.74
Picture-Number	52.48	50.66	49.41	49.10	50.82
Mosaic Comparisons	51.86	50.68	47.94	49.22	50.57
3-D Visualization	50.45	48.53	47.99	46.45	48.47
(d) Indicators of Responsibility					
ROTC	0.01	0.02	0.08	0.03	0.02
Varsity Athletics	0.31	0.23	0.27	0.17	0.24
Other Athletic Teams	0.36	0.31	0.34	0.28	0.32
Honorary Clubs	0.34	0.16	0.12	0.09	0.20
Student Government	0.31	0.21	0.16	0.12	0.21
Have Job	0.58	0.60	0.50	0.63	0.59
Days Absent	2.29	2.82	3.54	3.57	2.96
Suspended	0.05	0.07	0.12	0.11	0.08
Trouble with Law	0.01	0.01	0.01	0.02	0.01
(e) Demographics					
Family Income (thousands)	24.33	20.98	16.02	18.14	21.15
Importance of Aid	2.21	2.19	2.31	2.34	2.24
Family Owns Home	0.81	0.80	0.70	0.75	0.78
Number of Siblings	2.86	2.98	3.80	3.43	3.12
Father is Professional	0.21	0.13	0.05	0.07	0.14
Mother is Professional	0.24	0.15	0.14	0.09	0.17
Father's Education	13.39	12.66	12.37	12.15	12.77
Mother's Education	14.15	13.08	12.45	12.30	13.23
Proportion:					
White	0.70	0.70	0.50	0.70	0.69
Black	0.16	0.12	0.33	0.14	0.15
Hispanic	0.10	0.13	0.12	0.11	0.11
Oriental	0.02	0.02	0.01	0.01	0.02
Indian	0.01	0.02	0.03	0.03	0.02
Other	0.01	0.01	0.01	0.01	0.01
Sample size					
N	5445	2312	222	4013	13849
Percent	39.3	16.7	1.6	29.0	29.0

Table 10a

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO ENTER TWO-YEAR COLLEGES OR VOCATIONAL/TECHNICAL SCHOOLS (1980): MEANS FOR MALES

	Two-year College		Voc/Tech
	Academic	Vocational	School
(a) Accession Standards			
General Ability	52.36	48.09	47.27
Age	17.51	17.58	17.60
Single	1.00	1.00	0.99
Limiting Physical Condition	0.06	0.08	0.06
(b) High School Education			
Grade Point Average	2.76	2.60	2.55
Hours of Homework	3.36	2.92	2.41
Semesters of:			
English	5.84	5.65	5.75
Foreign Language	1.67	1.22	0.81
Mathematics	4.51	4.08	3.78
Science	3.84	3.27	2.83
Classes in:			
Physics	0.25	0.18	0.13
Chemistry	0.49	0.29	0.21
Computers	0.14	0.16	0.13
(c) Dimensions of Mental Ability			
Vocabulary	51.31	47.71	47.37
Reading	51.50	48.08	47.12
Verbal Ability	51.85	47.84	47.24
Mathematical	53.08	49.15	47.85
Picture-Number	49.68	48.75	47.90
Mosaic Comparisons	49.43	49.78	47.86
3-D Visualization	51.44	51.06	50.14
(d) Indicators of Responsibility			
ROTC	0.04	0.04	0.05
Varsity Athletics	0.51	0.45	0.39
Other Athletic Teams	0.53	0.51	0.44
Honorary Clubs	0.13	0.06	0.07
Student Government	0.16	0.14	0.11
Have Job	0.62	0.67	0.69
Days Absent	2.85	3.12	3.26
Suspended	0.14	0.17	0.18
Trouble with Law	0.06	0.06	0.08
(e) Demographics			
Family Income (thousands)	24.53	22.20	19.82
Importance of Aid	2.15	2.22	2.23
Family Owns Home	0.83	0.82	0.81
Number of Siblings	2.88	2.97	3.19
Father is Professional	0.17	0.13	0.08
Mother is Professional	0.20	0.18	0.14
Father's Education	13.04	12.68	12.43
Mother's Education	13.78	13.18	12.51
Proportion:			
White	0.73	0.69	0.68
Black	0.09	0.11	0.12
Hispanic	0.13	0.13	0.15
Oriental	0.03	0.03	0.01
Indian	0.02	0.04	0.03
Other	0.01	0.00	0.01
Sample size			
N	908	660	668
Percent	7.2	5.2	5.3

Table 10b

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO ENTER TWO-YEAR COLLEGES OR VOCATIONAL/TECHNICAL SCHOOLS (1980): MEANS FOR FEMALES

	Two-year College		Voc/Tech
	Academic	Vocational	School
(a) Accession Standards			
General Ability	50.16	47.44	46.12
Age	17.42	17.42	17.49
Single	0.99	0.99	0.98
Limiting Physical Condition	0.04	0.04	0.07
(b) High School Education			
Grade Point Average	3.00	2.91	2.82
Hours of Homework	3.95	3.78	3.53
Semesters of:			
English	5.93	5.82	5.82
Foreign Language	2.05	1.58	1.30
Mathematics	3.92	3.64	3.37
Science	3.29	3.07	2.71
Classes in:			
Physics	0.11	0.09	0.07
Chemistry	0.37	0.30	0.20
Computers	0.09	0.13	0.13
(c) Dimensions of Mental Ability			
Vocabulary	50.00	47.48	46.51
Reading	50.45	48.28	47.10
Verbal Ability	50.39	47.70	46.54
Mathematical	49.46	47.29	45.85
Picture-Number	50.75	50.52	50.14
Mosaic Comparisons	50.86	50.38	50.01
3-D Visualization	48.87	47.99	46.86
(d) Indicators of Responsibility			
ROTC	0.02	0.02	0.02
Varsity Athletics	0.24	0.23	0.18
Other Athletic Teams	0.31	0.30	0.30
Honorary Clubs	0.17	0.14	0.10
Student Government	0.22	0.19	0.16
Have Job	0.62	0.58	0.58
Days Absent	2.91	2.67	3.07
Suspended	0.06	0.09	0.09
Trouble with Law	0.01	0.02	0.01
(e) Demographics			
Family Income (thousands)	21.65	19.89	18.67
Importance of Aid	2.18	2.21	2.36
Family Owns Home	0.81	0.80	0.77
Number of Siblings	2.91	3.10	3.20
Father is Professional	0.14	0.11	0.05
Mother is Professional	0.16	0.12	0.10
Father's Education	12.81	12.43	12.23
Mother's Education	13.31	12.68	12.35
Proportion:			
White	0.71	0.68	0.67
Black	0.10	0.14	0.17
Hispanic	0.13	0.13	0.11
Oriental	0.02	0.02	0.01
Indian	0.02	0.02	0.02
Other	0.01	0.01	0.01
Sample size			
N	1438	874	928
Percent	10.4	6.3	6.7

Male two-year college planners in academic programshave more semesters of academic work in high school than did those in vocational programs who, in turn, have more semesters than did students planning to enter vocational/technical schools (except for English; see Table 10a). Further, the proportion of planners who studied physics and chemistry decreases as we move from the academic track to the vocational/technical schools. The proportion of planners enrolled in computer coursework, however, remains constant across these postsecondary educational tracks.

Aptitude

Two-year college planners fall in between four-year college planners and military and civilian labor force planners on several aptitude dimensions.[5] More specifically, two-year college planners tend to score slightly higher on verbal, quantitative, and spatial ability tests than did military planners and between a third and a half a standard deviation higher than did civilian labor force planners. A consistent trend in mean aptitude test scores also emerges in a comparison of students planning to enter two-year academic with those planning to enter vocational college programs or vocational/technical schools: aptitude scores decrease systematically moving from the academic track to the vocational-technical track. (The one exception is for scores on the Mosiac test.)

We infer from these data that enlistees from the two-year college market would, on average, meet and even surpass ability standards. Mean AFQT scores for male and female accessions during FY81 enable us to

[5] For a discussion of the psychometric properties of these tests, see Heyns and Hilton (1982).

partially test this conclusion (see Table 11). These scores are available for accessions by educational level: high school (nongraduates and graduates) and college (1 year, 2 years, 3-4 years, and graduate) and not, unfortunately, by type of educational institution, for example, two- and four-year colleges. If we assume that enlistees with one and two years of college are representative of enlistees from two-year colleges, a tenuous but perhaps not totally unreasonable assumption, we reach the same conclusion as we did with data from HS&B: mean AFQT scores are considerably higher for accessions with one or two years of college (for males, the means are 67.7 and 69.1, respectively) than for accessions with a high school education (51.6) or less (53.9). (For more detailed data on AFQT scores by military service, sex, and educational attainment, see Table A.4.)

As the differences in mean AFQT scores suggest, high proportions of the enlistees with some college fall in Mental Categories I-IIIA (Table 12). For example, while 52 percent of the male high school graduates have AFQT scores falling within Categories I-IIIA, over 77 percent of the men with one or two years of college fall within these categories. (For more details, see Table A.5.)

Table 11

MEAN AFQT SCORES FOR MALE AND FEMALE ACCESSIONS BY EDUCATIONAL ATTAINMENT, 1981

	High School		College			
	Nongraduate	Graduate	1 Year	2 Years	3-4 Years	Graduate
Males	53.9	51.6	67.7	69.1	70.5	73.0
Females	54.8	51.8	63.7	64.4	66.1	71.9
Both	54.1	51.7	66.9	68.0	69.5	72.7

Table 12

PERCENTAGES OF ENLISTMENTS IN MENTAL CATEGORIES I-IIIA
BY EDUCATIONAL ATTAINMENT AND SEX, 1981

	High School		College			
	Nongraduate	Graduate	1 Year	2 Years	3-4 Years	Graduate
Males	56.5	52.2	77.4	78.2	79.1	83.1
Females	66.1	53.0	72.5	74.1	73.0	82.9
Both	56.9	52.3	76.4	77.2	77.7	83.1

Responsibility: A Nontraditional Indicator of Quality

As a nontraditional indicator of quality, we looked for evidence of an individual's participation in extracurricular activities during high school that required a commitment of time and energy and a commitment to others who depended on the individual for successful completion of the activity. Put more simply, we looked for indicators of "responsibility." High School and Beyond provided a number of positive indicators as to whether the individuals participated in: (a) high school ROTC, (b) sports, (c) leadership activities, or (d) part-time work. The survey also provided negative indicators including days absent from school for reasons other than health and reports of being suspended from school, put on probation, or having serious trouble with the law.

As for participation in sports, leadership, and work-related activities, men planning on entering a two-year college were quite

similar to men planning on the military and fell in between men planning on a four-year college and the civilian labor force.[6] A greater proportion of seniors planning to enter the civilian labor force held jobs than did men planning to enter the military or a two-year college. Similarly, the proportion of men participating in these activities systematically decreases from the academic track to the vocational/technical track. The one exception was the proportion of men working, which showed, not unexpectedly, the opposite relation between participation and educational track (see Table 10a). Finally, the proportion of men planning on the military who participated in high school ROTC was about three times greater than the proportion of men planning to enter any of the other career tracks, including the academic and vocational programs in two-year colleges and vocational-technical schools (Table 9a and 10a).

Negative indicators of responsibility--indicators of "irresponsibility"--are absences for reasons other than health, suspension from school, and trouble with the law. Absences increased over the four career tracks shown in Table 9a, ranging from slightly more than two days for four-year college students to almost four days for men in the civilian labor force.[7] Similarly, the proportion of men who were suspended or who have had trouble with the law increases from the academic to the nonacademic tracks. For all three variables,

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[6] This pattern of findings holds for women except with respect to work--considerably fewer women in the military held jobs when in high school than did women planning to enter the other tracks.

[7] Subjects were asked, "Between the beginning of school last fall and Christmas vacation, about how many days were you absent from school for any reason, not counting illness?" They responded: none (our code 0), 1 or 2 days (our code 1), 3 or 4 days (our code 3), 5 to 10 days (our code 7), and so on.

there is a clear distinction between men planning to enter college (two- and four-year) and men planning on military service and the civilian labor force: men entering college tend to be less irresponsible. This trend of increasing irresponsibility moving from the academic to the nonacademic tracks is mirrored in Table 10a, where irresponsibility tends to increase as the educational track becomes increasingly vocational in orientation.

Demographic information on students planning to enter a two-year college is provided in Tables 9a, 9b, 10a and 10b along with data on persons planning other careers. In general, these students reported a mean parental income of $23,550 in 1980, somewhat below the family income of men planning on a four-year college and considerably above that of men planning on military service (Table 9a). Moreover, mean family income decreased from $24,530 for men planning on a two-year college in the academic track to $19,820 for men planning to enter vocational/technical schools (Table 10a). Eighty-two percent reported that their family owned its home, in contrast to 72 percent of the men planning on military service. Fifteen and 19 percent reported that their fathers and mothers (respectively) were professionals in the labor force and had 12.89 and 13.54 years of education, respectively. Men planning on entering a two-year college indicated that aid was somewhat important in deciding upon a college to attend, as did men planning on other careers.[8] Other data on ethnic/racial background and number of siblings may be found in Tables 9a and 10a.

[8] Aid was more important to women planning to enter the work force and may even have affected their decisions not to continue with education.

In summary, data on men planning to enter two-year colleges confirm current stereotypes: On measures of aptitude, academic curricular background, and demographic characteristics, they fall in between four-year college planners--who score higher on aptitude, have stronger academic backgrounds, demonstrate greater responsibility, and come from families with higher socioeconomic status--and military and civilian work force planners.

More important, however, is the finding that two-year college planners are remarkably similar to military planners on many of the indicators of "quality." These data indicate that, on average, male two-year college planners are ranked slightly higher on the quality indicators than are male military planners. We interpret this to mean that recruiting from the two-year college market would help to upgrade the quality of military accessions. However, analysis of the characteristics of men planning on academic or vocational programs in two-year colleges or in vocational/technical programs leads to a more specific conclusion--that men planning on vocational/technical school tend, on average, to fall slightly below men planning to enter the military on most of the indicators of quality. This leads us to recommend a greater recruiting effort in two-year colleges for reasons of quality as well as market size and density (see Table 1) while targeting recruiting in vocational/technical schools in critical occupational specialties (e.g., electrical engineering, computer programmers).

PENETRABILITY OF THE MARKET

To determine whether the two-year college market is penetrable, ideally we would like a randomized recruiting experiment in which a systematic effort is made to recruit students from this market. Falling short of an experiment, we would like some behavioral indication, not just a verbal report of intent, that students in these institutions can be attracted into the military.

On August 6, 1981, the Commandant of the Marine Corps authorized the nationwide implementation of the Community College Enlistment Program (CCEP), effective October 1981. The program was open to men and women who met the usual enlistment standards and were second-year students, associate degree graduates, or students who had completed a special college course in areas such as welding, drafting, or electrical construction. CCEP's goal was to obtain, using regular Marine Corps recruiters, 600 high-quality accessions annually who would fill any one of over 150 technical or administrative occupational specialties. Enlistment incentives included guaranteed occupational specialties, guaranteed four-year assignment in that specialty, appointment to private first class upon enlistment, promotion to corporal upon completion of 13 months active duty, promotion to sergeant after 25 months, and bonuses for certain occupations.

As of May 1982, the end of the first six months of the program, approximately 219 students had enlisted in the program, and 143 had actually gone to recruit training. Another 50 of the 219 cancelled their contracts, and 11 others were about to enter training. Apparently recruiters were experiencing limited success in enlisting students from

the community college market. One major barrier to recruiting was the reluctance of the recruiters to enter this new market, one virtually unknown to them.

Another source of information on the penetrability of the two-year college market is data on actual accessions during FY81. These data are presented in Table 13 by education attainment, sex, and branch of service. Unfortunately, DMDC's data do not indicate how many enlistees with one or two years of college attended two-year colleges. Nevertheless, we can interpret the counts of accessions with one and two years of college as overestimates of the number of accessions from two-year colleges. Put succinctly, the military attracted few students from two-year colleges in 1981. Less than 4 percent of all male and 8 percent of the female accessions had one or two years of college.

To put an upper bound on the military's current penetration of the two-year college market, let us suppose for the moment that all of the 14,000 enlistees with one or two years of college came from the two-year colleges. With a total enrollment of around 4.5 million in 1980, there were over 300 two-year college students for every enlistee. The 10,800 males in this group constituted only about 1.5 percent of the estimated 720,000 male two-year college enrollment in the prime age group (21 or below).

With neither direct nor indirect information on the penetrability of this market, the last resort is to make informed inferences on the bases of students' aspirations (Tables 14 and 15; standard deviations are reported in Tables A.7a and A.7b) and financial conditions (Tables 9 and 10). In particular, the question arises as to why high school seniors planning to enter either two-year colleges or the military are

Table 13

NPS ACCESSIONS IN THE ARMED FORCES BY EDUCATIONAL ATTAINMENT, SERVICE, AND SEX: FY81

Category	Army	Navy	USAF	USMC	DoD
			Males		
Nongraduate	21,668	21,744	6,986	8,177	58,575
H.S. graduate	71,721	56,133	53,192	28,366	209,412
1 yr college	1,784	1,886	1,710	609	5,989
2 yrs college	1,551	1,471	1,500	319	4,841
3-4 yrs college	572	587	480	140	1,779
College graduate	1,427	518	2,430	111	4,486
Total	98,723	82,339	66,298	37,722	285,082
			Females		
Nongraduate	1,043	746	1,130	10	2,929
H.S. graduate	15,219	7,714	8,174	1,928	33,035
1 yr college	609	494	410	127	1,640
2 yrs college	556	469	398	94	1,517
3-4 yrs college	201	150	117	18	486
College graduate	549	188	376	39	1,152
Total	18,177	9,761	10,605	2,216	40,759
			Both Sexes		
Nongraduate	22,711	22,490	8,116	8,187	61,504
H.S. graduate	86,940	63,847	61,366	30,294	242,447
1 yr college	2,393	2,380	2,120	736	7,629
2 yrs college	2,107	1,940	1,898	413	6,358
3-4 yrs college	773	737	597	158	2,265
College graduate	1,976	706	2,806	150	5,638
Total	116,900	92,100	76,903	39,938	325,841

Table 14

ASPIRATIONS OF HIGH SCHOOL SENIORS PLANNING TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES (1980)

a. Means for Males

	College		Military Service	Civilian Labor Force	All
	Four-year	Two-year			
Career Aspirations	60.17	48.77	43.30	35.74	47.34
Professional Aspirations	0.66	0.41	0.18	0.17	0.39
Age Hold First Regular Job	22.50	20.91	19.87	18.82	20.75
Years Education Expected	17.22	15.31	14.15	13.26	15.12
Years Ed. Expected by Mother	17.20	15.88	15.42	14.54	15.86
Ability to Complete College	4.70	4.40	4.02	3.69	4.21
Age Expect to Marry	24.46	23.93	23.82	23.09	23.82
Age Expect First Child	26.16	25.61	25.06	24.68	25.46
Sample size:					
N	4741	1568	694	4102	12615
Percent	37.6	12.4	5.5	32.5	32.5

b. Means for Females

	College		Military Service	Civilian Labor Force	All
	Four-year	Two-year			
Career Aspirations	60.78	51.80	47.97	42.79	51.76
Professional Aspirations	0.72	0.50	0.24	0.26	0.49
Age Hold First Regular Job	21.75	20.13	19.18	18.48	20.24
Years Education Expected	16.95	14.91	14.12	13.15	15.01
Years Ed. Expected by Mother	17.01	15.50	15.50	14.25	15.68
Ability to Complete College	4.63	4.43	3.90	3.66	4.21
Age Expect to Marry	23.57	22.38	23.54	21.45	22.51
Age Expect First Child	25.58	24.50	24.98	23.56	24.54
Sample size:					
N	5445	2312	222	4013	13849
Percent	39.3	16.7	1.6	29.0	29.0

Table 15

ASPIRATIONS OF HIGH SCHOOL SENIORS PLANNING TO ENTER TWO-YEAR COLLEGES OR VOCATIONAL/TECHNICAL SCHOOLS (1980)

a. Means for Males

	Two-year College		Voc/Tech
	Academic	Vocational	School
Career Aspirations	53.24	42.65	35.41
Professional Aspirations	0.52	0.26	0.14
Age Hold First Regular Job	21.31	20.31	19.75
Years Education Expected	15.75	14.70	13.77
Years Ed. Expected by Mother	16.19	15.42	14.41
Ability to Complete College	4.47	4.30	4.04
Age Expect to Marry	24.16	23.61	23.33
Age Expect First Child	25.82	25.33	24.95
Sample size:			
N	908	660	668
Percent	7.2	5.2	5.3

b. Means for Females

	Two-year College		Voc/Tech
	Academic	Vocational	School
Career Aspirations	54.27	47.75	42.44
Professional Aspirations	0.57	0.39	0.25
Age Hold First Regular Job	20.35	19.78	19.33
Years Education Expected	15.28	14.29	13.68
Years Ed. Expected by Mother	15.83	14.93	14.28
Ability to Complete College	4.45	4.38	4.07
Age Expect to Marry	22.55	22.11	21.88
Age Expect First Child	24.69	24.19	23.97
Sample size:			
N	1438	874	928
Percent	10.4	6.3	6.7

quite similar on many of the "quality" indicators discussed above but differ so radically in their intentions to enter the military. A considerably greater proportion of students planning to enter two-year colleges aspire to a professional career by age 30 than do students planning on entering the military (.41 and .50 for males and females planning to enter a two-year college versus .18 and .24 for the military). Furthermore, men planning to enter two-year colleges expect to obtain over a year more education than do men planning to enter the military. (This pattern is roughly the same for women.) The higher expectations among two-year college planners might be linked to financial factors: their parents' mean annual income is about $4,690 more than that for men planning to enter the military. (This difference holds for women as well, the difference being almost $5,000.) Other indicators suggest military planners come from families of lower socioeconomic status. Fewer of their families own their own home, they have more siblings, and their parents have slightly less education (Tables 9a and 9b). Financial necessity, then, may be an important factor explaining the differences in career aspirations and educational expectations between seniors planning to enter two-year colleges and those planning to join the military.

The implications for accession policy, in part, are these: recruiting packages need to address two-year-college students' educational expectations, professional aspirations, and financia' needs. Some kind of educational package probably should be included. This package might include, for example, support for completing the associate degree either before active duty or while on active duty, for example,

through the Community College of the Air Force (Testerman, 1981). Or it might include ROTC scholarships for the most talented to earn bachelors degrees in disciplines underlying the military's critical occupational specialties (e.g., engineering, science). Professional aspirations might be met, in part, by providing rapid advancement through the ranks as, for example, the Marine Corps has done in its Community College Enlistment Program. Financial incentives, both for competing with the civilian labor force and further education, have been built into the examples above. The importance of financial incentives for two-year college students should not be underestimated. This applies especially to the part-time student who has been out of high school for a year or two, gainfully employed but not on a career ladder, or to the student from a low-income family where immediate income, not long-term career opportunities, makes the military particularly attractive.

UTILITY OF RECRUITS WITH SOME COLLEGE

Recruits with some college are useful to the military if they successfully complete training in a minimum amount of time, fill critical occupational specialties, perform well on the job, and are not involved in disciplinary actions. The Defense Manpower Data Center can provide a wealth of data bearing on utility, especially on the extent to which enlistees with one, two, or more years of college fill critical occupational specialties and pose behavioral or performance problems.

We examined attrition rates and reasons for leaving the service for the cohort of nonprior service enlistees that entered service during FY78. The enlistees were divided into six groups according to their educational attainment and, within each educational group, were divided into two categories of mental ability: Categories I-IIIA and IIIB-IV (see Table 16).

Table 16

ATTRITION RATES AMONG NONPRIOR SERVICE ENLISTEES WHO ENTERED SERVICE DURING FY78 BY EDUCATIONAL ATTAINMENT, MENTAL CATEGORY, AND SEX

	Non-graduate		High School Graduate		College							
					One year		Two years		3-4 years		Graduate	
	I-IIIA	IIIB-IV	I-IIIA	IIIB-IV	I-IIIA	IIIB-IV	I-IIIA	IIIB-IV	I-IIIA	IIIB-IV	I-IIIA	IIIB-IV
Males												
Number of accessions[a]	29632	36376	82825	88443	4105	1417	3149	975	1030	372	1627	451
Overall attrition (%) through September 1981	53.9	60.1	31.7	42.2	27.6	41.9	28.3	37.9	28.8	41.7	36.0	43.9
Reason:												
Expiration of term of service or early release[b]	11.3	15.9	9.6	15.9	8.4	15.4	9.7	15.0	8.9	15.3	14.9	18.4
Failure to meet behavioral or performance criteria	34.0	35.5	14.9	19.1	11.9	18.8	10.8	14.6	11.7	16.1	11.1	17.1
Other reasons	8.7	8.8	7.3	7.2	7.4	7.7	7.8	8.4	8.3	10.2	10.1	8.4
Females												
Number of accessions[a]	2436	1128	18222	10402	1227	384	1023	273	305	75	805	160
Overall attrition (%) through September 1981	57.0	55.9	47.2	49.2	46.1	42.2	41.2	43.2	43.9	38.7	44.1	44.4
Reason:												
Expiration of term of service or early release[b]	5.3	5.4	9.9	10.6	10.8	8.6	9.5	9.5	12.5	8.0	14.2	15.0
Failure to meet behavioral or performance criteria	26.6	27.3	14.9	17.1	13.9	15.9	12.1	14.3	11.1	9.3	11.9	11.9
Other reasons	25.1	23.1	22.5	21.5	21.4	17.7	19.6	19.4	20.3	21.3	18.0	17.5

[a] These figures exclude enlisted accessions who later entered officer programs and those enlistees whose mental categories are unknown.

[b] Reasons for early release include school attendance, teaching, police duty, seasonal employment, national interest, and "insufficient retainability."

This study considers the overall attrition of these groups through September 1981. There are large differences in attrition rates between enlistees who did not complete high school and those who did. The higher attrition rates among men who did not complete high school is accounted for mainly by a much higher prevalence of separations due to behavioral and performance problems. Except for the lowest or highest educational categories, attrition rates are roughly the same, about 29 percent for individuals in Categories I-IIIA and about 40 percent for individuals in Categories IIIB-IV. Attrition rates for college graduates jump to 36 percent for individuals in Categories I-IIIA and 44 percent for Categories IIIB-IV. The incidence of attrition due to failure to meet behavioral or performance criteria was roughly the same for high school graduates and above: between 10.8 and 14.9 percent for men in Categories I-IIIA and 14.6 and 19.1 percent for Category IIIB-IV. Regardless of educational attainment, attrition due to medical reasons, family reasons, and so on was on the order of 7 to 10 percent. The overall pattern for women is similar. The pattern of findings that high school dropouts and college graduates show higher losses at expiration of term of service than the others is probably due to higher voluntary loss rates for the latter and, in part, to higher involuntary rates for the former.

COST CONSIDERATIONS ASSOCIATED WITH TWO-YEAR COLLEGE ACCESSIONS

A number of factors affect the cost of two-year college accessions, including recruiting costs, advanced pay grades for college credits, dependency status, and bonuses for entering critical military specialties. DMDC data on 1981 NPS accessions bear on some of these cost factors.

Military enlistment pay grades are adjusted for educational attainment; generally, the greater the education, the higher the pay grade. While this enlistment policy makes military pay grades more competitive with the civilian sector and serves as an enlistment enducement, it also means that enlistees from the two-year colleges will receive more pay than those enlisting right after high school. Table 17 contains data on entry pay grade by years of education. As before, we use accessions of enlistees with one or two years of college as proxies for two-year college accessions. Pay grade, as expected, varies with educational attainment: most enlistees with less than one year of college education enter at E-1, whereas enlistees with one or two years of education enter at E-2 or E-3, depending on the number of semester hours they have completed.

We would expect a smaller proportion of enlistees with some college to be single with no dependents than high school graduates simply by virtue of differences in ages. There is a clear difference in dependency status between male enlistees who are high school graduates (over 90 percent of the total male enlistments) and male enlistees with one or more years of college (see Table 18). As years of college increase, the percentage of single men with no dependents decreases (from 86.2 to 72.7 percent). Enlisted college men have a greater tendency to be married and have dependents. Not surprisingly, the mean age of male enlistees systematically increases as educational attainment increases. The picture is somewhat different for women: 91.2 percent of the high school graduates are single with no dependents, roughly 6 percent more than women in the other educational attainment categories.

Table 17

ENTRY LEVEL PAY GRADES BY SEX AND EDUCATIONAL ATTAINMENT
(Percent)

Pay Grade	High School		College			
	Nongraduate	Graduate	1 Year	2 Years	3-4 Years	Graduate
			Males			
E-1	96.1	86.1	20.9	10.5	9.9	3.0
E-2	1.8	6.2	36.1	9.6	7.3	2.1
E-3	2.1	7.7	42.9	79.8	81.8	52.4
E-4	0.0	0.0	0.0	0.0	0.1	0.1
E-5	0.0	0.0	0.0	0.0	0.8	42.4
			Females			
E-1	95.8	88.4	16.6	8.0	5.6	2.5
E-2	2.3	8.0	43.8	10.5	6.4	3.0
E-3	1.8	3.6	39.6	81.5	87.7	78.4
E-4	0.0	0.0	0.0	0.1	0.2	0.3
E-5	0.0	0.0	0.0	0.0	0.2	15.5
E-6	0.0	0.0	0.0	0.0	0.0	0.3

Table 18

MARITAL STATUS AND NUMBER OF DEPENDENTS BY SEX AND EDUCATIONAL ATTAINMENT
(Percent)

	High School		College			
	Nongraduate	Graduate	1 Year	2 Years	3-4 Years	Graduate
Males						
Single	90.2	92.5	86.2	81.4	78.4	72.7
Married with						
0 dependents	3.4	2.5	4.4	5.8	6.7	7.9
1 dependent	2.0	1.3	2.6	3.1	3.7	5.3
2 dependents	2.5	2.0	3.5	5.7	6.0	7.8
Other	1.9	1.7	3.3	4.0	5.2	6.3
Females						
Single	82.3	91.2	86.7	86.8	86.0	84.3
Married with						
0 dependents	9.2	4.4	6.9	6.7	7.6	8.5
1 dependent	3.7	1.6	2.8	2.4	2.7	2.7
2 dependents	2.7	1.5	2.1	2.2	1.6	3.2
Other	2.1	1.3	1.5	1.9	2.1	1.3

Few 1981 enlistees received bonuses. Only 2.7 percent of the men and 2.9 percent of the women received bonuses, and the percentages appear to be unrelated to educational attainment.

In sum, then, enlistees with one or more years of college may cost more than those with a high school education because on average, they enter at higher pay grades and are more likely to be married and have dependents. On the other hand, these increased costs apppear to be offset, at least in part, by lower first-term attrition. A more detailed analysis of the costs associated with recruiting two-year college students is beyond the scope of this study.

IV. SUMMARY AND RECOMMENDATIONS FOR FURTHER STUDIES

In this section, we summarize the major findings of the study and provide the context for recommending further research into the postsecondary education market.

The literature review and data analyses suggest that the postsecondary education market is sufficiently large to warrant further analysis. For example, we estimate that over one million men in this market fall within recruitment age ranges. The market contains a large number of potential recruits who meet or exceed enlistment standards. By recruiting from this market, the military may increase recruit quality in terms of the proportion of recruits who are high school graduates with above average aptitude. This market has not been substantially penetrated to date. For example, less then 4 percent of all NPS enlistees in 1981 had one or two years of college (and we do not know how many directly enlisted out of two-year colleges). Nevertheless, the market contains many students whose educational and occupational plans are in a state of flux. These students might consider enlistment if an attractive incentive package designed for them were offered. Moreover, our analyses suggest that two-year colleges would provide a cooperative recruiting environment, one that already has in place an administrative mechanism for coordinating recruiting with its counseling and guidance functions. Finally, preliminary analyses suggest that, once in the military, these students would perform well.

Although our research has provided a reasonably accurate profile of the marketplace, we do not know if the market can be penetrated. Should

the military increase its recruiting efforts to attract students leaving two-year colleges and vocational schools? The answer depends, in large part, on whether enlistment rates from these markets can be cost effectively increased. Further studies attempting to determine what recruitment strategies would be most fruitful are required. To this end, we identify four different types of studies: (1) analyses of existing data sets, (2) an examination of effective use of recruiters in the postsecondary market, (3) a market survey of alternative recruiting packages and communication channels, and (4) a targeted recruiting experiment in the postsecondary education market. We consider each alternative in turn.

ANALYSES OF EXISTING DATA SETS

This study raises more questions about the penetrability and utility of postsecondary education markets than it answers. Fortunately, a variety of data sets can be exploited to answer the following questions:

Recruiting Strategies

- To what extent does the military currently attract talented students from the nation's colleges and from its vocational schools?
- Are there particular locations (states, recruiting districts) that significantly outperform or underperform others in recruiting enlistees with some postsecondary education? If so, where are they?

- What recruiting practices (e.g., use of educational specialists, links between recruiter command and colleges) at these locations are especially successful?

Utility of Recruits

- How are individuals from two-year colleges and vocational schools utilized by the services?
- How well do they perform (as measured, for example, by average years of service, promotion rates, and percentage filling critical occupational specialties).
- Are enlistees from certain postsecondary education markets more likely to perform satisfactorily than enlistees from other markets?
- Are enlistees from two-year colleges and vocational schools more likely to serve longer tours of duty than, for example, enlistees right out of high school?

Postservice Activities

- What happens to high-quality enlistees with some postsecondary education after they leave the military?
- To what extent do they continue to serve the military as reservists and workers in defense-related industries?
- Do they fill key positions in the civilian sector after completing their educations?

More research is needed to provide better assessments of the sizes and compositions of the various subpopulations of youth that constitute the postsecondary recruiting markets. In the past, manpower analysts

have viewed the eligible population as being grouped by sex, age, mental category, and educational attainment, with the last ordinarily characterized by the dichotomy distinguishing the high school graduates from the others. Now that the military is considering broadening its recruiting efforts to concentrate on particular postsecondary markets, finer partitions of the youth population become of interest, including those defined in terms of postsecondary track, occupation (or instruction program), part-time or full-time status, and educational attainment, in addition to the usual demographic factors (sex, race, age, and marital/parenthood status).

The need for more comprehensive information on the youth labor and student populations becomes clear when we try to estimate the military's current penetration rates in various postsecondary education markets. As the disparate enrollment figures reported in this study show, there are large differences between the two-year college enrollments reported by the Bureau of Census and those by NCES. But even if they agreed, disaggregated figures by sex, high school graduating class, full-time/part-time status, marital/parenthood status, and type of institution are not available.

The problem of assessing penetration rates for the two-year colleges is particularly vexing. Although DMDC accessions files can be exploited to determine how many recruits have a year of college or more, they provide no information as to how many had less than a year of college, and the type of institution attended is not given. Even with this information, we would probably not know if individuals enlisted directly out of college.

Another problem in estimating penetration rates for the two-year colleges is that, unlike high school graduating classes which are fairly well defined and enumerated, two-year college populations are composed of numerous cohorts of high school graduates, many of which are not targets for or even eligible for enlistment. The students in the two-year colleges exhibit considerable variability in age, family status, physical condition, and commitments that make military service inconceivable for some of them except in a national emergency. Although a married man of age 27 with two children, a salary of $25,000, and a large mortgage may be eligible to enlist, his likelihood of doing so is infinitesimal. But should he be included in the student population in defining penetration rates? Where should the lines be drawn in defining the relevant subpopulations for recruiting purposes? The point here is that no matter where they are drawn, the distribution of young people in the subpopulations of interest is not known.

Although crude overall penetration rates can be computed, say, by dividing the total number of enlistees with one or two years of college by the total enrollment in all two-year colleges, these estimates may be misleading, and more refined estimates are not available in any form. For example, we found no information indicating what proportion of the entering two-year college freshmen in some year entered the military within a year or two (or any other time period). That information, along with similar information for the other postsecondary tracks, would provide indicators of the military's current penetration of those tracks that might later serve as baseline measures for assessing the effects of changes in recruiting strategies directed at those markets.

A better understanding of the youth labor market and the interface between military service and postsecondary education will become more pressing as the military copes with a shrinking college-age population and increasing competition from the civilian sector for high-quality recruits. If the military is to maintain its current manning levels, the services must either attract a high percentage of each cohort or adopt policies that lead to longer terms of service. Shifting to higher-quality enlistees may be desirable provided that the shift does not entail offering enlistment options that lead enlistees to leave the service, such as shorter terms of service or sizable postservice educational benefits that amount to negative reenlistment bonuses.

With the military's current emphasis on recruiting high school graduates, the cohorts of primary interest are the nation's high school graduating classes, and recruiting performance and penetration rates should be gauged in terms of the "takes" of the individual cohorts. What information we have on the composition of the military's recruits in terms of these cohorts leads us to conjecture that the military's recruiting during the past two years has succeeded in part through disproportionate recruiting of earlier cohorts of high school graduates. Although this tactic has worked well during the current recession, it may be impossible to repeat in a healthier economy.

To understand the two-year college and postsecondary vocation school recruiting market and to prepare for a less favorable recruiting climate, what is needed is a far more disaggregated analysis of the flow of the nation's high school graduates in and out of military service as well as in and out of other postsecondary activities. We believe that

such an analysis will shed more light on the penetrability and utility issues as well as on other matters at the interface of military service and postsecondary education, including the feasibility of using postservice educational benefits as recruitment incentives.[1]

The specific research tasks that we recommend are: (1) exploit existing military personnel files and survey data to determine where the high-quality recruits (especially those with some college) are coming from, their attributes, how they are being utilized, and how well and long they serve; (2) use current national data on labor force participation, school enrollment, marital/parenthood status, educational attainment, and military service to provide data on the distribution and flow of recent cohorts of high school graduates across postsecondary activities; (3) use longitudinal data files to get better information on patterns of military service, schooling, and civilian labor force participation of the nation's youth. Once follow-up surveys for High School and Beyond become available, those data will serve this purpose for the Class of 1980. The National Longitudinal Survey of the Class of 1972 is the best available data set for looking at the experience of a particular cohort of high school graduates in postsecondary education, military service, and postservice activities up to seven years after graduation. This rich longitudinal file, although dated, can shed considerable light on some of the unanswered questions in this study. The resultant information can be updated by other Rand research on enlistment decisionmaking (using the National Longitudinal Survey of

[1] Analyses of this sort are being conducted in a related Rand project on enlistment decisionmaking that utilizes the 1978 National Longitudinal Survey of Labor Force Behavior as its database in conjunction with the 1979 DoD Survey of Personnel Entering Military Service.

Youth 14-22) and annual surveys of The American Freshman (see, for example, Astin et al., 1981).

RECRUITERS IN THE POSTSECONDARY MARKETPLACE

Recruiting in the postsecondary market has not been systematically studied, and there are a number of reasons why it should be. First, unlike the high school market, most recruiters are unfamiliar with the postsecondary market; most have neither attended these schools nor systematically attempted to recruit in this market. Second, two-year college students, unlike high school students, move on and off campus unpredictably; over 60 percent of them are part-time students. Third, these students have opted for additional education and not military service after high school; their values and perceptions of military service are bound to differ markedly from those of recruiters, most of whom probably did not attend college before they joined the military.

There are, however, several characteristics of the postsecondary education market that lead us to believe that a systematic recruiting effort can meet both the military's accession goals and the schools' goals of enabling students to successfully complete their studies and finding employment afterwards for them. These schools are remarkably responsive to the economic and social environment compared with four-year colleges and universities. In this era of high unemployment, they appear to be quite willing to cooperate with the military, for example, by adapting their vocational education programs to better meet military needs and by coordinating their career placement with military recruiting. Moreover, two-year colleges have institutionalized a counseling and guidance function that appears to be a natural link between the colleges and recruiters.

We recommend, then, research on the interface between recruiters and two-year colleges and vocational schools. Analyses of DMDC accession files, for example, might identify recruiting districts that are unusually successful in recruiting from the target market. Interviews with recruiters and with local college administrators and counselors will provide data on successful recruiting strategies. An examination of successful recruiting strategies used in current pilot studies by several branches of the armed forces in the target market would provide another source of data. The goals of a study of the recruiter-college interface would be to determine who, if anyone special, should be selected to recruit in this market, what kinds of preparation, if any, these recruiters need to work successfully in the market, and what kinds of adjunct personnel (e.g., educational specialists) and institutional arrangements might facilitate recruiting.

SURVEY OF THE MARKET

There are a number of reasons to believe that the postsecondary education market can be penetrated. Many students' educational and occupational aspirations are changing, a fact mirrored by their behavior. Over 60 percent of the students are enrolled part-time; transfers into and out of colleges are common. Instability in and mobility among academic and vocational tracks and the labor force characterize the behavior of many of these students. Furthermore, many two-year college students have unrealistic educational and occupational plans that tend not to be realized. Transfer rates, for example, from two- to four-year colleges are, on average, quite low--around 6 percent complete a two-year college and then transfer to four-year institutions.

Because the career plans and behavior of many students in postsecondary educational institutions are in a state of flux, we believe that, with the right recruitment incentives and strategies, this market might be penetrated.

A survey of the two-year college and vocational school students and institutions has much to commend it. Perhaps its greatest merit is timeliness. Within a six-month period, a market survey should provide information about the demographic characteristics, attitudes, and aptitudes of the students, the attractiveness of enlistment incentives, and the feasibility of recruiter strategies and media campaigns.

There are, however, several drawbacks to a market survey. We might learn a lot about the students' intentions or plans and not about their actual enlistment behavior. This is especially problematic for the markets with which we are dealing. Students in two-year colleges tend to be unrealistic planners. Also, there will probably be a considerable number of students in the sample who respond frivolously or refuse to respond at all.

On balance, we believe the potential benefits of a market survey outweigh the drawbacks. Information on variables affecting verbal reports of enlistment attractiveness provide a starting point from which details of alternative enlistment packages can be developed. And nonresponse, if the desire not to be surveyed is distinguished from negative attitudes toward the military, provides important information about penetrability.

In designing a market survey, a number of factors should be taken into account. First, a recruiter or college counselor should be able to readily identify the demographic and other characteristics of the

students measured in the survey. Information on student recruiting based on characteristics that are not easily distinguishable is not of much value. Second, the enlistment incentives examined in the survey should be realistic, i.e., they should be options currently available to the services or those that may be available in the near future. Finding that a six-month term of enlistment would be quite attractive to these students (see Fisher et al., 1975) is of small practical value. For this and other reasons, the survey should be developed with input from each branch of the service and, perhaps, the survey should identify the particular branch with which the enlistment package is associated. Third, the survey should provide information relevant to the selection of recruiters and the development of recruiter contact and media exposure strategies.

RECRUITING EXPERIMENT

The studies proposed above would provide information about the penetrability of the postsecondary education market. However, each has its shortcomings. The recruiter study does not directly bear on market penetrability. The analyses of existing data sets provide a baseline for assessing penetrability by showing what enlistment rates from different markets have been and what student attributes--such as socioeconomic status, attitudes toward the military, and career plans--are related to enlistments. But even very thorough studies of existing data may shed little light on how changes in recruitment strategies might affect recruiting in certain subpopulations. Sample surveys can, at best, provide indirect assessments of the attractiveness of alternative recruiting practices; they cannot assess actual enlistment behavior. The proposed studies provide a rational basis for framing

recruitment strategies in the postsecondary education market, but before considerable amounts of money, time, and human resources are committed to recruiting from this market, more direct evidence of recruitment potential seems desirable.

To this end, we recommend examining the feasibility of conducting a small-scale, controlled experiment to assess the penetrability of the market. This experiment would examine the impact of alternative recruiting incentives, recruiter strategies, and media campaigns on the enlistment rates of students in two-year colleges and postsecondary vocational schools. It would be implemented in a few two-year colleges and vocational schools in several geographically diverse states. It would be sequential--alternative recruiting incentives and strategies would be continued until their feasibility for national implementation was established. If ineffective strategies could be eliminated early in the test the time and cost of conducting the study would be minimized.

In sum, there are a number of different studies that might be conducted to ascertain the penetrability of the target market and the associated costs. Taken together, the studies would provide a reasonably comprehensive analysis of the target market and the information needed for developing accession policies.

Table A.1a

COMPARISON OF ATTRIBUTES OF NLS72 PARTICIPANTS WHO PLANNED TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES WITH THOSE WHO DID UNDERTAKE THOSE ACTIVITIES: STANDARD DEVIATIONS FOR MALES

Attribute	Postsecondary Education						Military Service		Civilian Labor Force	
	Four-year		Two-year		Voc/Tech					
	s_P	s_D	s_P	s_D	s_P	s_D	s_P	s_D	s_P	s_D
(a) Accession Standards										
General Ability	8.43	7.94	8.42	8.45	8.71	9.12	9.74	9.50	8.90	9.11
Age	0.59	0.57	0.64	0.63	0.72	0.67	0.73	0.73	0.76	0.74
Single	0.05	0.04	0.00	0.00	0.12	0.12	0.10	0.12	0.82	0.16
(b) High School Education										
Semesters of:										
Foreign Language	2.08	2.07	1.93	1.94	1.73	1.91	2.00	2.00	1.73	1.81
Mathematics	1.74	1.72	1.86	1.81	1.90	1.98	1.94	1.86	1.84	1.85
Science	1.83	1.82	1.85	1.80	1.72	1.90	1.83	1.76	1.66	1.69
Grade Point Average	0.91	0.86	0.91	0.92	0.85	0.84	0.93	0.86	0.92	0.92
(c) Mental Ability										
Mathematics	8.29	7.87	9.14	8.98	8.82	9.44	9.69	9.01	8.80	9.00
Verbal Ability	8.58	8.14	8.35	8.42	8.76	9.06	9.71	9.74	9.09	9.22
(d) Demographics										
Family Income (1000s)	6.71	6.74	5.96	6.12	5.57	5.45	5.89	5.52	5.71	5.68
Number of Siblings	1.53	1.52	1.53	1.51	1.61	1.63	1.58	1.51	1.56	1.54
Father's Occupation	23.94	24.06	22.67	22.77	20.97	20.81	22.25	21.98	20.75	20.94
Mother is Professional	0.35	0.36	0.34	0.33	0.27	0.31	0.23	0.26	0.25	0.25
Father's Education	2.93	2.92	2.55	2.55	2.39	2.41	2.55	2.38	2.19	2.33
Mother's Education	2.14	2.15	1.89	1.89	1.92	1.92	1.97	1.95	1.77	1.78
Proportion:										
Black	0.29	0.28	0.27	0.26	0.34	0.33	0.35	0.40	0.34	0.31
Hispanic	0.18	0.16	0.24	0.26	0.16	0.18	0.28	0.25	0.22	0.21
(e) Aspirations										
Career Aspirations	17.00	17.03	19.74	19.97	15.04	17.16	14.35	16.71	17.80	18.65
Professional Aspirations	0.46	0.46	0.50	0.50	0.29	0.35	0.30	0.40	0.34	0.38
Years Education Expected	1.08	1.16	1.53	1.60	0.89	1.45	1.95	1.99	1.52	1.70

Table A.1b

COMPARISON OF ATTRIBUTES OF NLS72 PARTICIPANTS WHO PLANNED TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES WITH THOSE WHO DID UNDERTAKE THOSE ACTIVITIES: STANDARD DEVIATIONS FOR FEMALES

Attribute	Postsecondary Education						Military Service		Civilian Labor Force	
	Four-year		Two-year		Voc/Tech					
	s_P	s_D	s_P	s_D	s_P	s_D	s_P	s_D	s_P	s_D
(a) Accession Standards										
General Ability	8.58	8.22	8.38	8.57	8.51	8.88	9.75	9.27	9.00	8.70
Age	0.56	0.55	0.59	0.58	0.65	0.63	0.86	0.59	0.70	0.68
Single	0.07	0.07	0.10	0.06	0.18	0.14	0.13	0.00	0.22	0.22
(b) High School Education										
Semesters of:										
Foreign Language	2.10	2.12	2.09	2.07	2.02	2.12	1.87	2.13	1.91	1.95
Mathematics	1.80	1.78	1.83	1.83	1.67	1.79	1.78	1.93	1.66	1.64
Science	1.80	1.79	1.68	1.66	1.59	1.76	1.61	1.72	1.44	1.47
Grade Point Average	0.86	0.83	0.91	0.92	0.91	0.91	0.86	0.82	0.95	0.92
(c) Mental Ability										
Mathematics	8.75	8.41	8.69	9.07	8.69	9.05	9.61	9.70	8.70	8.50
Verbal Ability	8.58	8.27	8.49	8.59	8.60	8.88	9.65	9.25	9.23	8.93
(d) Demographics										
Family Income (1000s)	6.92	6.97	6.05	6.28	5.30	5.17	5.60	4.15	5.22	5.36
Number of Siblings	1.53	1.52	1.45	1.54	1.60	1.60	1.39	1.71	1.57	1.50
Father's Occupation	23.88	23.85	23.28	23.04	21.49	22.05	21.13	17.29	20.63	21.19
Mother is Professional	0.37	0.38	0.30	0.33	0.25	0.28	0.28	0.30	0.24	0.24
Father's Education	3.00	3.00	2.54	2.64	2.33	2.22	2.26	1.66	2.21	2.29
Mother's Education	2.22	2.20	1.85	1.99	1.76	1.70	1.71	1.12	1.74	1.75
Proportion:										
Black	0.35	0.33	0.28	0.31	0.39	0.37	0.40	0.41	0.36	0.31
Hispanic	0.18	0.16	0.23	0.22	0.21	0.19	0.00	0.26	0.20	0.21
(e) Aspirations										
Career Aspirations	13.94	13.85	17.76	17.58	16.17	17.87	10.87	11.16	13.47	15.58
Professional Aspirations	0.39	0.39	0.50	0.49	0.42	0.47	0.31	0.30	0.35	0.42
Years Education Expected	0.98	1.05	1.40	1.50	0.98	1.37	1.86	1.36	1.33	1.54

Table A.2a

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES (1980): STANDARD DEVIATIONS FOR MALES

	College		Military	Civilian	
	Four-year	Two-year	Service	Labor Force	All
(a) Accession Standards					
General Ability	9.45	9.17	9.93	8.45	10.25
Age	0.58	0.61	0.68	0.70	0.65
Single	0.05	0.05	0.05	0.09	0.07
Limiting Physical Condition	0.21	0.25	0.23	0.28	0.25
(b) High School Education					
Grade Point Average	0.70	0.67	0.73	0.67	0.75
Hours of Homework	3.48	2.67	2.75	2.16	3.08
Semesters of:					
English	0.83	1.19	1.27	1.38	1.19
Foreign Language	2.27	1.99	2.16	1.70	2.12
Mathematics	1.54	1.81	1.95	1.90	1.91
Science	1.81	1.83	1.92	1.83	1.98
Classes in:					
Physics	0.50	0.42	0.42	0.33	0.45
Chemistry	0.46	0.49	0.47	0.40	0.49
Computers	0.39	0.36	0.33	0.27	0.34
(c) Dimensions of Mental Ability					
Vocabulary	9.48	8.76	9.27	8.10	9.51
Reading	9.42	9.58	9.85	9.38	10.33
Verbal Ability	9.91	9.25	9.89	8.52	10.27
Mathematical	8.62	9.48	10.28	9.14	10.25
Picture-Number	9.21	9.87	10.65	10.77	10.18
Mosaic Comparisons	9.22	10.42	10.81	10.66	10.29
3-D Visualization	10.76	9.88	10.75	9.91	10.55
(d) Indicators of Responsibility					
ROTC	0.15	0.19	0.31	0.18	0.18
Varsity Athletics	0.49	0.50	0.49	0.48	0.50
Other Athletic Teams	0.49	0.50	0.50	0.49	0.50
Honorary Clubs	0.44	0.30	0.32	0.22	0.35
Student Government	0.43	0.36	0.31	0.29	0.37
Have Job	0.49	0.48	0.49	0.45	0.48
Days Absent	3.60	4.31	5.20	5.14	4.56
Suspended	0.30	0.36	0.42	0.42	0.37
Trouble with Law	0.18	0.23	0.25	0.29	0.23
(e) Demographics					
Family Income (thousands)	14.27	12.73	10.58	12.14	13.35
Importance of Aid	0.78	0.77	0.75	0.76	0.77
Family Owns Home	0.37	0.38	0.45	0.40	0.39
Number of Siblings	1.96	2.11	2.48	2.39	2.21
Father is Professional	0.43	0.36	0.29	0.28	0.37
Mother is Professional	0.43	0.39	0.40	0.34	0.40
Father's Education	2.18	1.84	1.75	1.59	1.95
Mother's Education	2.84	2.43	2.03	2.01	2.57
Proportion:					
White	0.43	0.45	0.49	0.44	0.44
Black	0.33	0.30	0.40	0.31	0.32
Hispanic	0.27	0.33	0.34	0.30	0.30
Oriental	0.16	0.17	0.13	0.10	0.14
Indian	0.11	0.17	0.17	0.17	0.15
Other	0.09	0.08	0.12	0.09	0.09

Table A.2b

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES (1980): STANDARD DEVIATIONS FOR FEMALES

	College		Military	Civilian	
	Four-year	Two-year	Service	Labor Force	All
(a) Accession Standards					
General Ability	9.71	8.47	9.48	8.19	9.71
Age	0.59	0.61	0.75	0.70	0.65
Single	0.05	0.09	0.00	0.13	0.12
Limiting Physical Condition	0.20	0.20	0.22	0.27	0.23
(b) High School Education					
Grade Point Average	0.68	0.66	0.71	0.71	0.74
Hours of Homework	3.41	2.84	2.84	2.55	3.14
Semesters of:					
English	0.84	1.05	1.34	1.31	1.10
Foreign Language	2.36	2.08	2.22	1.69	2.19
Mathematics	1.71	1.80	1.93	1.80	1.88
Science	1.84	1.79	1.82	1.66	1.87
Classes in:					
Physics	0.43	0.30	0.39	0.27	0.36
Chemistry	0.49	0.48	0.44	0.36	0.48
Computers	0.33	0.31	0.34	0.33	0.32
(c) Dimensions of Mental Ability					
Vocabulary	9.49	8.40	8.73	7.99	9.16
Reading	9.52	8.93	9.58	9.05	9.77
Verbal Ability	9.95	8.64	9.30	8.27	9.72
Mathematical	9.21	8.85	9.98	8.60	9.76
Picture-Number	8.69	9.61	10.71	10.49	9.65
Mosaic Comparisons	9.40	9.23	12.63	10.15	9.83
3-D Visualization	9.55	9.03	9.26	8.46	9.22
(d) Indicators of Responsibility					
ROTC	0.12	0.14	0.27	0.16	0.14
Varsity Athletics	0.46	0.42	0.45	0.37	0.43
Other Athletic Teams	0.48	0.46	0.47	0.45	0.47
Honorary Clubs	0.47	0.37	0.32	0.29	0.40
Student Government	0.46	0.40	0.36	0.33	0.41
Have Job	0.49	0.49	0.50	0.48	0.49
Days Absent	3.53	4.14	5.52	4.95	4.37
Suspended	0.23	0.26	0.33	0.32	0.28
Trouble with Law	0.09	0.10	0.12	0.14	0.12
(e) Demographics					
Family Income (thousands)	13.79	11.62	9.33	10.59	12.48
Importance of Aid	0.78	0.78	0.66	0.71	0.76
Family Owns Home	0.39	0.40	0.46	0.43	0.41
Number of Siblings	1.97	2.08	2.30	2.42	2.19
Father is Professional	0.41	0.34	0.21	0.25	0.34
Mother is Professional	0.43	0.36	0.34	0.29	0.37
Father's Education	2.13	1.66	1.64	1.37	1.87
Mother's Education	2.76	2.24	1.75	1.73	2.45
Proportion:					
White	0.46	0.46	0.50	0.46	0.46
Black	0.37	0.32	0.47	0.35	0.35
Hispanic	0.30	0.34	0.32	0.31	0.31
Oriental	0.15	0.14	0.09	0.12	0.14
Indian	0.11	0.15	0.18	0.17	0.15
Other	0.09	0.09	0.12	0.09	0.09

Table A.3a

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO ENTER TWO-YEAR COLLEGES OR VOCATIONAL/TECHNICAL SCHOOLS (1980): STANDARD DEVIATIONS FOR MALES

	Two-year College		Voc/Tech
	Academic	Vocational	School
(a) Accession Standards			
General Ability	9.01	8.80	8.36
Age	0.60	0.62	0.70
Single	0.05	0.06	0.08
Limiting Physical Condition	0.23	0.27	0.24
(b) High School Education			
Grade Point Average	0.68	0.64	0.64
Hours of Homework	2.68	2.64	2.14
Semesters of:			
English	1.12	1.28	1.35
Foreign Language	2.00	1.94	1.70
Mathematics	1.75	1.85	1.92
Science	1.89	1.69	1.77
Classes in:			
Physics	0.43	0.38	0.34
Chemistry	0.50	0.45	0.41
Computers	0.35	0.37	0.34
(c) Dimensions of Mental Ability			
Vocabulary	8.82	8.28	8.01
Reading	9.40	9.48	9.31
Verbal Ability	9.16	8.87	8.48
Mathematical	9.26	9.31	9.27
Picture-Number	9.89	9.83	10.26
Mosaic Comparisons	10.13	10.79	10.33
3-D Visualization	10.18	9.47	10.25
(d) Indicators of Responsibility			
ROTC	0.19	0.19	0.21
Varsity Athletics	0.50	0.50	0.49
Other Athletic Teams	0.50	0.50	0.50
Honorary Clubs	0.33	0.23	0.26
Student Government	0.37	0.34	0.31
Have Job	0.49	0.47	0.46
Days Absent	4.33	4.27	4.38
Suspended	0.35	0.37	0.38
Trouble with Law	0.23	0.23	0.28
(e) Demographics			
Family Income (thousands)	12.66	12.69	11.28
Importance of Aid	0.78	0.75	0.76
Family Owns Home	0.38	0.38	0.40
Number of Siblings	2.09	2.14	2.22
Father is Professional	0.37	0.33	0.27
Mother is Professional	0.00	0.00	0.00
Father's Education	1.91	1.72	1.50
Mother's Education	2.46	2.34	1.79
Proportion:			
White	0.45	0.46	0.47
Black	0.28	0.32	0.33
Hispanic	0.33	0.34	0.35
Oriental	0.18	0.16	0.09
Indian	0.14	0.19	0.17
Other	0.08	0.07	0.12

Table A.3b

ATTRIBUTE PROFILE OF HIGH SCHOOL SENIORS PLANNING TO ENTER TWO-YEAR COLLEGES OR VOCATIONAL/TECHNICAL SCHOOLS (1980): STANDARD DEVIATIONS FOR FEMALES

	Two-year College		Voc/Tech
	Academic	Vocational	School
(a) Accession Standards			
General Ability	8.57	8.02	7.80
Age	0.61	0.62	0.67
Single	0.09	0.08	0.13
Limiting Physical Condition	0.20	0.20	0.25
(b) High School Education			
Grade Point Average	0.66	0.65	0.67
Hours of Homework	2.96	2.64	2.60
Semesters of:			
English	1.00	1.12	1.16
Foreign Language	2.15	1.93	1.84
Mathematics	1.79	1.81	1.82
Science	1.78	1.80	1.65
Classes in:			
Physics	0.31	0.29	0.25
Chemistry	0.48	0.46	0.40
Computers	0.29	0.33	0.34
(c) Dimensions of Mental Ability			
Vocabulary	8.55	7.95	7.83
Reading	9.00	8.63	8.54
Verbal Ability	8.81	8.09	7.87
Mathematical	8.87	8.65	8.52
Picture-Number	9.43	9.90	9.20
Mosaic Comparisons	9.11	9.41	9.97
3-D Visualization	9.01	9.02	8.70
(d) Indicators of Responsibility			
ROTC	0.13	0.15	0.14
Varsity Athletics	0.43	0.42	0.38
Other Athletic Teams	0.46	0.46	0.46
Honorary Clubs	0.38	0.35	0.30
Student Government	0.41	0.39	0.36
Have Job	0.49	0.49	0.49
Days Absent	4.35	3.77	4.42
Suspended	0.24	0.28	0.29
Trouble with Law	0.08	0.13	0.12
(e) Demographics			
Family Income (thousands)	11.78	11.27	10.34
Importance of Aid	0.77	0.78	0.72
Family Owns Home	0.39	0.40	0.42
Number of Siblings	2.03	2.16	2.16
Father is Professional	0.35	0.31	0.21
Mother is Professional	0.00	0.00	0.00
Father's Education	1.70	1.54	1.42
Mother's Education	2.34	2.00	1.64
Proportion:			
White	0.45	0.47	0.47
Black	0.30	0.35	0.38
Hispanic	0.34	0.34	0.32
Oriental	0.14	0.13	0.11
Indian	0.15	0.15	0.16
Other	0.10	0.08	0.10

Table A.4

MEAN AFQT SCORES BY EDUCATIONAL ATTAINMENT, SEX, AND BRANCHES OF SERVICE, 1981

	High School		College			
	Nongraduate	Graduate	1 Year	2 Years	3-4 Years	Graduate
			Males			
Army	46.2	44.0	63.7	65.9	67.3	72.8
Navy	58.0	55.0	69.3	71.0	72.4	73.4
USAF	64.0	58.0	69.3	70.4	71.6	74.2
USMC	54.5	52.4	70.2	69.2	71.7	68.4
			Females			
Army	50.8	43.8	59.0	57.2	59.7	70.5
Navy	59.5	56.5	65.1	67.8	70.3	74.6
USAF	62.9	59.1	66.3	68.2	70.6	73.3
USMC	74.7	65.3	72.0	73.4	74.4	71.8

Table A.5

PERCENTAGES OF ENLISTMENTS IN MENTAL CATEGORIES I-IIIA BY EDUCATIONAL ATTAINMENT, SEX, AND BRANCH OF SERVICE

	High School		College			
	Nongraduate	Graduate	1 Year	2 Years	3-4 Years	Graduate
			Males			
Army	36.0	38.5	70.6	72.9	72.2	81.8
Navy	66.8	58.1	79.0	80.4	81.9	85.7
USAF	85.5	64.2	81.9	81.6	84.4	85.1
USMC	58.4	52.8	80.3	77.7	78.6	78.0
			Females			
Army	46.9	35.9	61.2	58.6	60.2	79.6
Navy	68.5	61.3	75.7	80.6	78.0	86.7
USAF	82.0	67.8	77.6	82.4	84.8	85.8
USMC	100.0	91.5	97.6	97.9	100.0	97.4

Table A.6

ASPIRATIONS OF HIGH SCHOOL SENIORS PLANNING TO UNDERTAKE CERTAIN POSTSECONDARY ACTIVITIES (1980)

a. Standard Deviations for Males

	College		Military	Civilian	
	Four-year	Two-year	Service	Labor Force	All
Career Aspirations	16.71	18.70	16.21	18.08	20.64
Professional Aspirations	0.47	0.49	0.39	0.38	0.49
Age Hold First Regular Job	2.32	2.32	2.56	1.91	2.71
Years Education Expected	1.87	1.98	2.38	1.75	2.54
Years Ed. Expected by Mother	1.98	2.20	2.69	2.41	2.50
Ability to Complete College	0.53	0.74	1.04	1.14	0.98
Age Expect to Marry	2.42	2.57	2.86	2.85	2.72
Age Expect First Child	2.39	2.56	2.84	2.85	2.71

b. Standard Deviations for Females

	College		Military	Civilian	
	Four-year	Two-year	Service	Labor Force	All
Career Aspirations	15.39	16.64	13.69	15.38	17.56
Professional Aspirations	0.45	0.50	0.43	0.44	0.50
Age Hold First Regular Job	2.25	2.19	2.10	1.62	2.46
Years Education Expected	1.88	1.80	2.30	1.65	2.42
Years Ed. Expected by Mother	1.94	2.10	2.68	2.23	2.41
Ability to Complete College	0.58	0.68	0.96	1.07	0.94
Age Expect to Marry	2.28	2.31	2.70	2.55	2.61
Age Expect First Child	2.19	2.29	2.62	2.53	2.56

Table A.7

ASPIRATIONS OF HIGH SCHOOL SENIORS PLANNING TO ENTER TWO-YEAR COLLEGES OR VOCATIONAL/TECHNICAL SCHOOLS (1980)

a. Standard Deviations for Males

	Two-year College		Voc/Tech
	Academic	Vocational	School
Career Aspirations	18.41	17.32	15.36
Professional Aspirations	0.50	0.44	0.34
Age Hold First Regular Job	2.38	2.10	1.81
Years Education Expected	2.00	1.76	0.94
Years Ed. Expected by Mother	2.15	2.19	1.71
Ability to Complete College	0.67	0.82	0.98
Age Expect to Marry	2.52	2.60	2.61
Age Expect First Child	2.51	2.60	2.73

b. Standard Deviations for Females

	Two-year College		Voc/Tech
	Academic	Vocational	School
Career Aspirations	16.29	16.42	15.00
Professional Aspirations	0.49	0.49	0.43
Age Hold First Regular Job	2.28	1.99	1.60
Years Education Expected	1.91	1.42	0.98
Years Ed. Expected by Mother	2.13	1.93	1.84
Ability to Complete College	0.66	0.72	0.92
Age Expect to Marry	2.26	2.37	2.50
Age Expect First Child	2.26	2.30	2.35

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